References & Bibliography

- Abbas, H. A., Tadros, S. H., El-Toumy, S. A., Salama, A. M., & El Gedaily, R. A. **(2022)**. A Review on Traditional uses, Phytochemistry and Pharmacological Potential of Family Malpighiaceae. *Egyptian Journal of Chemistry*, *65(11)*, 235-274
- Abdel-Alim, M. E., Samaan, K., Guillaume, D., & Amla, H. **(2023)**. Green Synthesis of Silver Nanoparticles using Egyptian Date Palm (*Phoenix dactylifera* L.) Seeds and Their Antibacterial Activity Assessment. *Bioactivities*, *1(1)*, 1–8. https://doi.org/10.47352/bioactivities.2963-654x.180
- Achari, A. E., & Jain, S. K. **(2017)**. l -Cysteine supplementation increases insulin sensitivity mediated by upregulation of GSH and adiponectin in high glucose treated 3T3-L1 adipocytes. *Archives of Biochemistry and Biophysics*, *630*, 54–65. https://doi.org/10.1016/j.abb.2017.07.016
- Adeosun, A.M., Oni, S. O., Osasenaga,M.I., Durosinlorun, O. H., & Omotayo,M.O. **(2016)**. Phytochemical, minerals and free radical scavenging profiles of *Phoenix dactilyfera* L. seed extract. *Journal of Taibah University Medical Sciences*, *11*(1), 1–6. https://doi.org/10.1016/j.jtumed.2015.11.006
- Adepu, S., & Ramakrishna, S. **(2021)**. Controlled Drug Delivery Systems: Current Status and Future Directions. *Molecules*, *26*(19), 5905. https://doi.org/10.3390/molecules26195905
- Ahmad, I., Yanuar, A., Mulia, K., & Mun'im, A. **(2017)**. Application of Ionic Liquid as a Green Solvent for Polyphenolics Content Extraction of *Peperomia pellucida* (L) Kunth Herb. *Journal of Young Pharmacists*, *9*(4), 486–490. https://doi.org/10.5530/jyp.2017.9.95
- Ahmed, H.A., Alkali, I.Y., Mahmud, A.F. **(2018)**. *In silico* molecular docking studies of some phytochemicals against dipeptidyl peptidase 4. *Int Res J Pharm Med Sci.1(6)*,65-68.
- Aksit, A. C., & Onar, N. **(2008)**. Leaching and fastness behavior of cot ton fabrics dyed with different type of dyes using sol-gel process. *Journal of Applied Polymer Science*, *109(1)*, 97–105. https://doi.org/ 10.1002/app.27284
- Akter, S., Lee, S., Siddiqi, M. Z., Balusamy, S. R., Ashrafudoulla, M., Rupa, E. J., & Huq, M. A. **(2020)**. Ecofriendly Synthesis of Silver Nanoparticles by *Terrabacter humi* sp. nov. and Their Antibacterial Application against Antibiotic-Resistant Pathogens. *International Journal of Molecular Sciences*, *21(24)*, 9746. https://doi.org/10.3390/ijms21249746
- Alavi, M., & Hamblin, M. **(2023)**. Antibacterial silver nanoparticles: effects on bacterial nucleic acids. *Cellular Molecular and Biomedical Reports*, *3*(1), 35–40. https://doi.org/10.55705/cmbr.2022.361677.1065
- Albeladi, S. S. R., Malik, M. A., & Al-Thabaiti, S. A. **(2020)**. Facile biofabrication of silver nanoparticles using *Salvia officinalis* leaf extract and its catalytic activity towards Congo red dye degradation. *Journal of Materials Research and Technology*, *9(5)*, 10031–10044. https://doi.org/10.1016/j.jmrt.2020.06.074
- Albrecht, F., Leontiev, R., Jacob, C., & Slusarenko, A. **(2017)**. An Optimized Facile Procedure to Synthesize and Purify Allicin. *Molecules*, *22*(5), 770. https://doi.org/10.3390/molecules22050770
- Aldabaan, N. A., Turakani, B., Mahnashi, M. H., Shaikh, I. A., *et al…* & Iqubal, S. S. **(2024)**. Evaluation of antimicrobial, anticancer, antidiabetic, antioxidant activities and silver nanoparticles synthesized from Indian Clove- *Syzygium aromaticum* leaf extract. *Journal of King Saud University - Science*, *36*(4), 103142. https://doi.org/10.1016/j.jksus.2024.103142
- Alex, B. K., Koshy, E. P., Jacob, S., & Thomas, G. **(2021)**. Wild edible fruit crop *Haematocarpus validus* (Miers) Bakh.f. ex Forman (Khoon phal): a novel source of nutraceuticals. *Journal of Food Science and Technology*, *59(1)*, 168–178. https://doi.org/10.1007/s13197-021-04997-7
- Alex, B.K., Koshy, E.P., & Thomas, G. **(2018)**. Antioxidant profile of *Haematocarpus validus* (miers) bakh.f. ex forman (khoonphal) leaf and fruit: a medicinally important rare ethnic fruit crop. http://plantarchives.org/18-02/2031-2036%20(4320).pdf
- Al-Farsi, M., Alasalvar, C., Al-Abid, M., Al-Shoaily, K., Al-Amry, M., & Al-Rawahy, F. **(2007)**. Compositional and functional characteristics of dates, syrups, and their by-products. *Food Chemistry*, *104*(3), 943–947. https://doi.org/10.1016/j.foodchem.2006.12.051
- Ali, A. Y., Alani, A.-A. K., Ahmed, B. O., & Hamid, L. L. **(2024)**. Effect of biosynthesized silver nanoparticle size on antibacterial and anti-biofilm activity against pathogenic multi-drug resistant bacteria. *OpenNano*, *20*, 100213. https://doi.org/10.1016/j.onano.2024.100213
- Ali, I.A.M., Ahmed, A.B. & Al-Ahmed, H.I. **(2023)**. Green synthesis and characterization of silver nanoparticles for reducing the damage to sperm parameters in diabetic compared to metformin. *Sci Rep*, *13*, 2256. https://doi.org/10.1038/s41598-023-29412-3
- Ali, W. A., Richards, S. E., & Alzard, R. H. **(2025)**. Unlocking the potential of ball milling for nanomaterial Synthesis: An overview. *Journal of Industrial and Engineering Chemistry*, *149*, 63-93 https://doi.org/10.1016/j.jiec.2025.01.054
- Alkhoori, M. A., Kong, A. S.-Y., Aljaafari, M. N., *et al…*& Lai, K.-S. **(2022)**. Biochemical Composition and Biological Activities of Date Palm (*Phoenix dactylifera* L.) Seeds: A Review. *Biomolecules*, *12*(11), 1626. https://doi.org/10.3390/biom12111626
- Al-Mafarjy, S. S., Suardi, N., Ahmed, N. M., Kernain, D., Alkatib, H. H., & Dheyab, M. A. **(2024)**. Green synthesis of gold nanoparticles from *Coleus scutellarioides* (L.) Benth leaves and assessment of anticancer and antioxidant properties. *Inorganic Chemistry Communications*, *161*, 112052. https://doi.org/10.1016/j.inoche.2024.112052
- Al-Radadi, N. S., Al-Bishri, W. M., Salem, N. A., & ElShebiney, S. A. **(2023)**. Plant-mediated green synthesis of gold nanoparticles using an aqueous extract of *Passiflora ligularis*, optimization, characterizations, and their neuroprotective effect on propionic acid-induced autism in Wistar rats. *Saudi Pharmaceutical Journal*, *32*(2), 101921. https://doi.org/10.1016/j.jsps.2023.101921
- Al-Sheddi, E. **(2019)**. Anticancer potential of seed extract and pure compound from *Phoenix dactylifera* on human cancer cell lines. *Pharmacognosy Magazine*, *15(63)*, 494. https://doi.org/10.4103/pm.pm_623_18
- Alshehri, L. a. A., & Attia, N. F. **(2025)**. Sustainable and green treatment approach for embroidered based fabrics for integrating antibacterial, UV protection and strengthening properties. *Chemical Papers*, *79(5)*, 3157–3167. https://doi.org/10.1007/s11696-025-03996-8

References

- American Diabetes Association **(2013)**. Standards of medical care in diabetes--2013. *Diabetes care*, *36 Suppl 1*(Suppl 1), S11–S66. https://doi.org/10.2337/dc13-S011
- Amini, E. & Azadfallah, M. **(2018**). *In situ* synthesis of silver nanoparticles on fiber matrix for preparing antibacterial paper. *Biointerface Research in Applied Chemistry*, *8*,449–3456.
- Anam, W., Akhtar, K. S., Muhammad, M., Sardar, S., & Saleem, I. **(2024)**. Development of novel and sustainable ozone based dyeing processes for cotton fabric. *Cellulose*, *31(13)*, 8335–8349. https://doi.org/10.1007/s10570-024-06095-1
- Angela, F., Claudia N. H., Marise A.R.P., & Angela, A.M. **(2014)**, Allicin-Rich Extract obtained from Garlic by pressurized liquid extraction: Quantitative Determination of Allicin in Garlic Samples, Food and Public Health, *4(6)*,272-278.
- Aramwit. P., Bang, N., Ratanavaraporn, J., & Ekgasit. S. **(2014)**. Green synthesis of silk sericin-capped silver nanoparticles and their potent anti-bacterial activity, *Nanoscale research letters*, *9(1)*, 79. https://doi.org/10.1186/1556-276X-9-79
- Arshad, H., Sadaf, S., & Hassan, U. **(2022)**. De-novo fabrication of sunlight irradiated silver nanoparticles and their efficacy against *E. coli* and *S. epidermidis*. *Scientific Reports*, *12(1)*, 676. https://doi.org/10.1038/s41598-021-04674-x
- Arthur, S., & Ewald, S., **(2006)**. Chemical investigations on alliin, the specific principle of garlic. In: Nord, F.F. (Ed.), *Advances in Enzymology and Related Areas of Molecular Biology*. John Wiley & Sons Publisher, New York, NY, USA.
- Arya, S. S., Rookes, J. E., Cahill, D. M., & Lenka, S. K. **(2022)**. Reduced Genotoxicity of Gold Nanoparticles With Protein Corona in *Allium cepa*. *Frontiers in Bioengineering and Biotechnology*, *10*, 849464. https://doi.org/10.3389/fbioe.2022.849464
- Asanithi, P., Chaiyakun, S., Limsuwan, P. **(2012)**. Growth of silver nanoparticles by DC magnetron sputtering. *J Nanomater*, 963609.
- Ashish, D., & S. Vibhu, **(2022**). Formulation and Evaluation of Floating Tablet of Thiocolchicoside, *Current Research in Pharmaceutical Sciences*, 59-67.
- Athanassiadis, B., Abbott, P., George, N., & Walsh, L. **(2009)**. An *in vitro* study of the antimicrobial activity of some endodontic medicaments and their bases using an agar well diffusion assay. *Australian Dental Journal*, *54*(2), 141–146. https://doi.org/10.1111/j.1834-7819.2009.01107.x
- Babb, J., Davies, J., & Ayliffe, G. **(1983)**. Contamination of protective clothing and nurses' uniforms in an isolation ward. *Journal of Hospital Infection*, *4*(2), 149-157.
- Bagchi, K., & Puri, S. **(1998)**. Free radicals and antioxidants in health and disease. *East Mediterranean Health Jr*, *4*,350–60.
- Balakumaran, M., Ramachandran, R., Jagadeeswari, S., & Kalaichelvan, P. **(2016)**. *In vitro* biological properties and characterization of nanosilver coated cotton fabrics–An application for antimicrobial textile finishing. *International biodeterioration & biodegradation*, *107*, 48-55.
- Balamurugan, M., Saravanan, S., & Soga, T. **(2017)**. Coating of green-synthesized silver nanoparticles on cotton fabric. *Journal of Coatings Technology and Research*, *14*, 735-745.
- Banstola, A., Pham, T. T., Jeong, J., & Yook, S. **(2019)**. Polydopamine-tailored paclitaxel-loaded polymeric microspheres with adhered NIR-controllable gold nanoparticles for chemo-phototherapy of pancreatic cancer. *Drug Delivery*, *26*(1), 629–640. https://doi.org/10.1080/10717544.2019.1628118
- Batiha, G. E., Beshbishy, A. M., Wasef, L. G., Elewa, Y. H. A., Al-Sagan, A. A., El-Hack, M. E. A., Taha, A. E., Abd-Elhakim, Y. M., & Devkota, H. P. **(2020)**. Chemical Constituents and Pharmacological Activities of Garlic (*Allium sativum* L.): A Review. *Nutrients*, *12*(3), 872. https://doi.org/10.3390/nu12030872
- Batool, Z., Muhammad, G., Iqbal, M. M., *et al*.... & Shafiq, Z. **(2022)**. Hydrogel assisted synthesis of gold nanoparticles with enhanced microbicidal and *in vivo* wound healing potential. *Scientific Reports*, *12*(1), 6575. https://doi.org/10.1038/s41598-022-10495-3
- Bayan L, Koulivand PH, Gorji A. **(2014)**. Garlic: A Review of Potential Therapeutic Effects. *Avicenna J Phytomed*, *4*, 1-4.
- Bazan, D., Lopez, E., Caceres, A., Degen, R., & Alvarenga, N. **(2020)**. *In vitro* anthelmintic activity of methanol extracts and fractions of two amphilophium species against *Eisenia Fetida*. *J Appl Biol Biotech,8(02)*, 98-102.
- Bazana, D., Lopezb,E., Caceresa,A., Degenb,R., & Alvarengaa,N. **(2020)**. *In vitro* anthelmintic activity of methanol extracts and fractions of two amphilophium species against *Eisenia Fetida*, *Journal of Applied Biology and Biotechnology*, *8*, 98-102, https://doi.org/10.7324/JABB.2020.80216
- Begum, H. A., Musa, M. M., Khan, A., Rafiq, N., Wahed, A., Muhammad Hamayun, Moon, Y.S., Ali, S., & Rafia, A. **(2023)**. Pharmacological evaluation of *Phoenix dactylifera* L. seed extracts revealed analgesic, anti-inflammatory and antispasmodic activities. *Pakistan Journal of Botany*, *56*(3).
- Bergström, C. A. S. **(2005)**. *In silico* Predictions of Drug Solubility and Permeability: Two Rate- limiting Barriers to Oral Drug Absorption. Basic & Clinical Pharmacology & Toxicology, 96(3), 156–161. https://doi.org/10.1111/j.1742-7843.2005.pto960303.x
- Bhardwaj, B., Singh, P., Kumar, A., Kumar, S., & Budhwar, V. **(2020)**. Eco-Friendly Greener Synthesis of Nanoparticles. *Adv Pharm Bull*. *10(4)*, 566-576. doi: 10.34172/apb.2020.067.
- Bhattacharya, R., & Mukherjee, P. **(2008)**. Biological properties of "naked" metal nanoparticles. *Advanced Drug Delivery Reviews*, *60*(11), 1289–1306. https://doi.org/10.1016/j.addr.2008.03.013
- Bhavi, S. M., Thokchom, B., Singh, S. R., Bajire, S. K., Shastry, R. P., *et al*... & Yarajarla, R. B. **(2025)**. *Syzygium malaccense* leaf extract-mediated silver nanoparticles: synthesis, characterization, and biomedical evaluation in *Caenorhabditis elegans* and lung cancer cell line. *Green Chemistry Letters and Reviews*, *18*(1). https://doi.org/10.1080/17518253.2025.2456624
- Bhuyar S. R, M. M Auti, S. A Bhise, P. S Radal, P. S Gore, S. B Sapkal, & H. J. Dhongade. **(2024)**. Innovations and advancements in floating tablet drug delivery systems: a comprehensive review. *Pharmacy & Pharmacology International Journal*, *12*(5), 195–200. https://doi.org/10.15406/ppij.2024.12.00452
- Bi, X., Lim, J., & Henry, C. J. **(2016)**. Spices in the management of diabetes mellitus. *Food Chemistry*, *217*, 281–293. https://doi.org/10.1016/j.foodchem.2016.08.111
- Blessymole, K.A., Eapen,P.K., Thomas,G. **(2018)**.Comprehensive metabolite profiling of *Haematocarpus validus* (miers) bakh.f. ex forman leaf and fruit samples using FTIR spectroscopic analysis. *Plant Archives*, *18(1)*, (2018)897-900.
- Blois, M.S. **(1958)**. Antioxidant determinations by the use of a stable free radical. *Nature*, *181*, 1199–1200.
- Bohra, P., Waman, A.A., Roy, S.D., Shivashankara, K.S. **(2020)**. Blood fruit (*Haematocarpus validus* (Miers.) Bakh. f. ex Forman). A novel source of natural food colourant. *J Food Sci Technol*, *57*, 381–389

References

- Bonny, S., Paquin, L., Carrié, D., Boustie, J., & Tomasi, S. **(2011)**. Ionic liquids based microwave-assisted extraction of lichen compounds with quantitative spectrophotodensitometry analysis. *Analytica Chimica Acta*, *707*(1), 69–75. https://doi.org/10.1016/j.aca.2011.09.009
- Borlinghaus, J., Albrecht, F., Gruhlke, M., Nwachukwu, I., & Slusarenko, A. **(2014)**. Allicin: Chemistry and biological properties. *Molecules*, *19*(8), 12591–12618. https://doi.org/10.3390/molecules190812591
- Boruah, S. K., Medhi, C. M. K., Boruah, P. K., & Sarma, P. **(2012)**. Green synthesis of gold nanoparticles using *Camellia sinensis* and kinetics of the reaction. *Advanced Materials Letters*, *3(6)*, 481–486. https://doi.org/10.5185/amlett.2012.icnano.103
- Bosca, B., & Mot, A. C. **(2023)**. Novel simultaneous determination of alliin and allicin in Allium sp. using digital subtraction HPTLC. *Journal of Chromatography B*, *1222*, 123700. https://doi.org/10.1016/j.jchromb.2023.123700
- Bouhlali, E. D. T., Alem, C., Ennassir, J., Benlyas, M., Mbark, A. N., & Zegzouti, Y. F. **(2015)**. Phytochemical compositions and antioxidant capacity of three date (*Phoenix dactylifera* L.) seeds varieties grown in the South East Morocco. *Journal of the Saudi Society of Agricultural Sciences*, *16*(4), 350–357. https://doi.org/10.1016/j.jssas.2015.11.002
- Brown, J.E., & Rice-Evan, C.A. **(1998)**. Luteolin-rich Artichoke extract protects low density lipoprotein from oxidation in vitro. *Free Radic Res*, **29**, 247–255
- Bruna, T., Maldonado-Bravo, F., Jara, P., & Caro, N. **(2021)**. Silver nanoparticles and their antibacterial applications. *International Journal of Molecular Sciences*, *22(13)*, 7202. https://doi.org/10.3390/ijms22137202
- Bulle, S., Reddyvari, H., Nallanchakravarthula, V., & Vaddi, D. R. **(2016)**. Therapeutic potential of *Pterocarpus santalinus* L.: an update. *Pharmacognosy reviews*, *10(19)*, 43.
- Bunaciu, A. A., Udriştioiu, E. G., & Aboul-Enein, H. Y. **(2015)**. X-Ray diffraction: instrumentation and applications. Critical *Reviews in Analytical Chemistry*, *45(4)*, 289–299. https://doi.org/10.1080/10408347.2014.949616
- Buske, J., König, C., Bassarab, S., Lamprecht, A., Mühlau, S., & Wagner, K. G. **(2012)**. Influence of PEG in PEG–PLGA microspheres on particle properties and protein release. *European Journal of Pharmaceutics and Biopharmaceutics*, *81*(1), 57–63. https://doi.org/10.1016/j.ejpb.2012.01.009
- Caldorera-Moore, M., Guimard, N., Shi, L., & Roy, K. **(2010)**. Designer nanoparticles: incorporating size, shape and triggered release into nanoscale drug carriers. *Expert Opinion on Drug Delivery*, *7(4)*, 479–495. https://doi.org/10.1517/17425240903579971
- Caputo, D., Fusco, C., Nacci, A., Palazzo, G., Murgia, S., Accolti, L., & Gentile, L. **(2021)**. A selective cellulose/hemicellulose green solvents extraction from buckwheat chaff. *Carbohydrate Polymer Technologies and Applications*, *2*, 100094. https://doi.org/10.1016/j.carpta.2021.100094
- Caschera, D., Cortese, B., Mezzi, A., Brucale, M., Ingo, G. M., Gigli, G., & Padeletti, G. **(2013)**. Ultra hydrophobic/superhydrophilic modified cotton textiles through functionalized diamond-like carbon coatings for self-cleaning applications. *Langmuir*, *29*(8), 2775-2783.
- Castro-Aceituno, V., Abbai, R., Moon, S. S., *et al…* & Yang, D. C. **(2017)**. *Pleuropterus multiflorus* (Hasuo) mediated straightforward eco-friendly synthesis of silver, gold nanoparticles and evaluation of their anti-cancer activity on A549 lung cancer cell line. *Biomedicine & Pharmacotherapy*, *93*, 995–1003. https://doi.org/10.1016/j.biopha.2017.07.040
- Chahardoli, A., Karimi, N., Sadeghi, F., & Fattahi, A. **(2018)**. Green approach for synthesis of gold nanoparticles from *Nigella arvensis* leaf extract and evaluation of their antibacterial, antioxidant, cytotoxicity and catalytic activities. *Artificial cells, nanomedicine, and biotechnology*, *46(3)*, 579–588. https://doi.org/10.1080/21691401.2017.1332634
- Chamkouri, N., Koolivand, Z., Niazvand, F., & Mojaddami, A. **(2023)**. Phytochemical analysis, characterization, and biosynthesis of gold nanoparticles, zinc oxide nanoparticles, and gold-zinc oxide nanocomposites from *Phoenix dactylifera* L. seeds: Biological evaluation. *Inorganic Chemistry Communications*, *156*, 111146. https://doi.org/10.1016/j.inoche.2023.111146
- Chang, Y., Hawkins, B. A., Du, J. J., Groundwater, P. W., Hibbs, D. E., & Lai, F. **(2022)**. A Guide to In Silico Drug Design. *Pharmaceutics*, *15*(1), 49. https://doi.org/10.3390/pharmaceutics15010049
- Chatel, G., & Varma, R. S. **(2019)**. Ultrasound and microwave irradiation: contributions of alternative physicochemical activation methods to Green Chemistry. *Green Chemistry*, *21*(22), 6043–6050. https://doi.org/10.1039/c9gc02534k
- Chavan, R.D., Shinde, P., Girkar, K., Madage, R., & Chowdhary, A. **(2016)**. Assessment of Anti-Influenza activity and hemagglutination inhibition of *Plumbago indica* and *Allium sativum* extracts. *Phcog Res*, *8*, 105-11.
- Chaves, N., Santiago, A., & Alías, J. C. **(2020)**. Quantification of the Antioxidant Activity of Plant Extracts: Analysis of Sensitivity and Hierarchization Based on the Method Used. *Antioxidants*, *9*(1), 76. https://doi.org/10.3390/antiox9010076
- Chen, J., Li, Y., Fang, G., Cao, Z., Shang, Y., Alfarraj, S., Alharbi, S. A., Li, J., Yang, S., & Duan, X. **(2021)**. Green synthesis, characterization, cytotoxicity, antioxidant, and anti-human ovarian cancer activities of *Curcumae kwangsiensis* leaf aqueous extract green-synthesized gold nanoparticles. *Arabian Journal of Chemistry*, *14(3)*, 103000. https://doi.org/10.1016/j.arabjc.2021.103000
- Chen, W., Cai, W., Zhang, L., Wang, G., & Zhang, L. **(2001)**. Sonochemical Processes and Formation of Gold Nanoparticles within Pores of Mesoporous Silica. *Journal of Colloid and Interface Science*, *238*(2), 291–295. https://doi.org/10.1006/jcis.2001.7525
- Chitrakar, B., Zhang, M., Devahastin, S., Adhikari, B., & Zhang, X. **(2022)**. Valorization of Asparagus leafy by-product by ionic-liquid extraction and characterization of bioactive compounds in the extracts. *Food Bioscience*, *46*, 101600. https://doi.org/10.1016/j.fbio.2022.101600
- Choo, S., Chin, V. K., Wong, E. H., Madhavan, P., Tay, S. T., Yong, P. V. C., & Chong, P. P. **(2020)**. Review: antimicrobial properties of allicin used alone or in combination with other medications. *Folia Microbiologica*, *65*(3), 451–465. https://doi.org/10.1007/s12223-020-00786-5
- Choudhury, P. K., & Kar, M. **(2008)**. Controlled release metformin hydrochloride microspheres of ethyl cellulose prepared by different methods and study on the polymer affected parameters. *Journal of Microencapsulation*, *26*(1), 46–53. https://doi.org/10.1080/02652040802130503
- Costa, M. S., Ramos, A. M., & Cardoso, M. M. **(2025)**. Drug Release Kinetics of PLGA-PEG Microspheres Encapsulating Aclacinomycin A: The Influence of PEG Content. *Processes*, *13*(1), 112–112. https://doi.org/10.3390/pr13010112
- Cyril, N., George, J. B., Joseph, L., Raghavamenon, A. C., & VP, S. **(2019)**. Assessment of antioxidant, antibacterial and anti-proliferative (lung cancer line A549) activities of green synthesized silver nanoparticles from *Derris trifoliata*. *Toxicology Research*. doi:10.1039/c8tx00323h
- Dana, T., Pathan, A.K., Ahmad, S. **(2024)**. Optimized Extraction and Characterization of Allicin from Snow Mountain Garlic and its Anticancer Potential via Allicin-loaded CuO Nanoparticles. *International Journal of Pharmaceutical Quality Assurance, 15(2)*, 931-942.

References

- Daoudi, H., Bouafia, A., Laouini, S. E., Meneceur, S., Fellah, M., Iqbal, A., El-Hiti, G. A., & Selmi, B. **(2024)**. *In vitro* and *in silico* study of biosynthesized silver nanoparticles using *Nigella sativa* extract against SARS-CoV-2 and *Candida albicans*. *Journal of Molecular Liquids*, *405*, 125059. https://doi.org/10.1016/j.molliq.2024.125059
- Dash, S., Murthy, P. N., Nath, L., & Chowdhury, P. **(2010)**. Kinetic modeling on drug release from controlled drug delivery systems. *Acta poloniae pharmaceutica*, *67*(3), 217–223.
- Dash, T. K., & Konkimalla, V. B. **(2012)**. Poly-ϵ-caprolactone based formulations for drug delivery and tissue engineering: A review. *Journal of Controlled Release*, *158*(1), 15–33. https://doi.org/10.1016/j.jconrel.2011.09.064
- Davis, S. S., Stockwell, A. F., Taylor, M. J., Hardy, J. G., Whalley, D. R., Wilson, C. G., Bechgaard, H., & Christensen, F. N. **(1986)**. The effect of density on the gastric emptying of single- and multiple-unit dosage forms. *Pharmaceutical Research*, *3*(4), 208–213. https://doi.org/10.1023/a:1016334629169
- Debnath, P., Mondal, A., Hajra, A., Das, C., & Mondal, N. K. **(2018)**. Cytogenetic effects of silver and gold nanoparticles on *Allium cepa* roots. *Journal of Genetic Engineering and Biotechnology*, *16*(2), 519–526. https://doi.org/10.1016/j.jgeb.2018.07.007
- Devanesan, S., & AlSalhi, M. S. **(2021)**. Green Synthesis of Silver Nanoparticles Using the Flower Extract of *Abelmoschus esculentus* for Cytotoxicity and Antimicrobial Studies. *International journal of nanomedicine*, *16*, 3343–3356. https://doi.org/10.2147/IJN.S307676
- Devaraj, P., Kumari, P., Aarti, C., & Renganathan, A. **(2013)**. Synthesis and Characterization of Silver Nanoparticles Using Cannonball Leaves and Their Cytotoxic Activity against MCF-7 Cell Line. *Journal of Nanotechnology*, 1–5. https://doi.org/10.1155/2013/598328
- Disanto, R. M., Subramanian, V., & Gu, Z. **(2015)**. Recent Advances in Nanotechnology for Diabetes Treatment. *Wiley Interdisciplinary Reviews. Nanomedicine and Nanobiotechnology*, *7(4)*, 548–564. https://doi.org/10.1002/wnan.1329
- Divya, B. J., Suman, B., Venkataswamy, M., & Thyagaraju, K. **(2017)**. A study on phytochemicals, functional groups and mineral composition of Allium sativum (garlic) cloves. *International Journal of Current Pharmaceutical Research*, *9(3)*, 42. https://doi.org/10.22159/ijcpr.2017.v9i3.18888.
- Dong, X., Gao, L., Xiao, T., Zhang, J., & Ping, Q. **(2025)**. Green and sustainable fabrication of UV-resistance and antioxidant cotton via self-crosslinking bamboo ethanol lignin. *Industrial Crops and Products*, *230*, 121118. https://doi.org/10.1016/j.indcrop.2025.121118
- Drucker, D. J. **(2007)**. Dipeptidyl peptidase-4 inhibition and the treatment of type 2 diabetes: preclinical biology and mechanisms of action. *Diabetes Care*, *30(6)*, 1335–1343. https://doi.org/10.2337/dc07-0228
- Dumur, F., Guerlin, A., Dumas, E., Bertin, D., Gigmes, D., & Mayer, C. R. **(2011)**. Controlled spontaneous generation of gold nanoparticles assisted by dual reducing and capping agents. *Gold Bulletin*, *44*(2), 119–137. https://doi.org/10.1007/s13404-011-0018-5
- Earle, R. R., Bandaru, K. K., & A, L. U. **(2018)**. Formulation and characterization of sustained release coated matrix granules of metformin hydrochloride. *Asian Journal of Pharmaceutical and Clinical Research*, *11*(7), 387. https://doi.org/10.22159/ajpcr.2018.v11i7.24996
- Egbaria, K., & Friedman, M. **(1990)**. Sustained release albumin microspheres containing antibacterial drugs: Effects of preparation conditions on kinetics of drug release. *Journal of Controlled Release*, *14*(1), 79–94. https://doi.org/10.1016/0168-3659(90)90063-y
- Ekins, S., Mestres, J., & Testa, B. **(2007)**. *In silico* pharmacology for drug discovery: methods for virtual ligand screening and profiling. *British Journal of Pharmacology*, *152*(1), 9–20. https://doi.org/10.1038/sj.bjp.0707305
- El-Far, A. H., Ahmed, H. A., & Shaheen, H. M. **(2016)**. Dietary Supplementation of Phoenix dactylifera Seeds Enhances Performance, Immune Response, and Antioxidant Status in Broilers. *Oxidative Medicine and Cellular Longevity*, *2016*, 1–9. https://doi.org/10.1155/2016/5454963
- Elia, P., Zach, R., Hazan, S., Kolusheva, S., Porat, Z., Zeiri, Y. **(2014)**. Green synthesis of gold nanoparticles using plant extracts as reducing agents. *Int. J. Nanomed*, *9*, 4007–4021.
- El-Naggar, N. E., El-Sawah, A. A., Elmansy, M. F., *et al…* & Dalal, S. R. **(2024)**. Process optimization for gold nanoparticles biosynthesis by *Streptomyces albogriseolus* using artificial neural network, characterization and antitumor activities. *Scientific Reports*, *14*(1), 4581. https://doi.org/10.1038/s41598-024-54698-2
- El-Nour, K. M. A., Eftaiha, A., Al-Warthan, A., & Ammar, R. A. (2010). Synthesis and applications of silver nanoparticles. *Arabian Journal of Chemistry*, *3*(3), 135–140. https://doi.org/10.1016/j.arabjc.2010.04.008
- Erci, F., Cakir-Koc, R., & Isildak, I. (**2018)**. Green synthesis of silver nanoparticles using *Thymbra spicata* L. var. spicata (zahter) aqueous leaf extract and evaluation of their morphology-dependent antibacterial and cytotoxic activity. *Artificial cells, nanomedicine, and biotechnology*, *46*(sup1), 150–158. https://doi.org/10.1080/21691401.2017.1415917
- Ezike, T. C., Okpala, U. S., Onoja, U. L., Nwike, C. P., Ezeako, E. C., Okpara, O. J., Okoroafor, C. C., Eze, S. C., Kalu, O. L., Odoh, E. C., Nwadike, U. G., Ogbodo, J. O., Umeh, B. U., Ossai, E. C., & Nwanguma, B. C. **(2023)**. Advances in drug delivery systems, challenges and future directions. *Heliyon*, *9*(6), e17488. https://doi.org/10.1016/j.heliyon.2023.e17488
- Farshori, N. N., Al-Oqail, M. M., Al-Sheddi, E. S., Al-Massarani, S. M., Saquib, Q., Siddiqui, M. A., Wahab, R., & Al-Khedhairy, A. A. **(2022)**. Green synthesis of silver nanoparticles using *Phoenix dactylifera* seed extract and its anticancer effect against human lung adenocarcinoma cells. *Journal of Drug Delivery Science and Technology*, *70*, 103260. https://doi.org/10.1016/j.jddst.2022.103260
- Filipović-Grčić, J., Perissutti, B., Moneghini, M., Voinovich, D., Martinac, A., & Jalšenjak, I. **(2003)**. Spray-dried carbamazepine-loaded chitosan and HPMC microspheres: preparation and characterisation. *Journal of Pharmacy and Pharmacology*, *55*(7), 921–931. https://doi.org/10.1211/0022357021503
- Fiorati, A., Bellingeri, A., Punta, C., Corsi, I., & Venditti, I. **(2020)**. Silver Nanoparticles for Water Pollution Monitoring and Treatments: Ecosafety Challenge and Cellulose-Based Hybrids Solution. *Polymers*, *12*(8), 1635. https://doi.org/10.3390/polym12081635
- Firdhouse, J., & Pottail, L. **(2016)**. Assessment of α- amylase inhibitory action of some edible plant sources. *Medicine, Environmental Science*
- Firdhouse, M. J., & Lalitha, P. **(2020)**. Facile synthesis of anisotropic gold nanoparticles and its synergistic effect on breast cancer cell lines. *IET Nanobiotechnology*, *14*(3), 224–229. https://doi.org/10.1049/iet-nbt.2019.0279

References

- Firdhouse, M. J., Lalitha, P., Arulpriya, P., *et al…* & Sivakumar, S. **(2024)**. Green synthesis of ultrafine gold nanoparticles from sweet flag (*Acorus calamus*) for effective anti-leukemic, anti-urolithiatic and *in silico* docking studies. *Journal of Molecular Liquids*, *408*, 125329. https://doi.org/10.1016/j.molliq.2024.125329
- Fiskesjo, G., **(1997)**. Allium test for screening chemicals: evaluation of cytological parameters. *Plants Environ. Stud. 101*, 307–333. http://dx.doi.org/10.1201/9781420048711.ch11
- Foksowicz-Flaczyk, J., & Walentowska, J. **(2013)**. Antifungal activity of ionic liquid applied to linen fabric. *International Biodeterioration & Biodegradation*, *84*, 412-415.
- Freeman, F., & Kodera, Y. **(1995)**. Garlic Chemistry: Stability of S-(2-Propenyl)-2-Propene-1-sulfinothioate (Allicin) in Blood, Solvents, and Simulated Physiological Fluids. *Journal of Agricultural and Food Chemistry*, *43(9)*, 2332–2338. doi:10.1021/jf00057a004
- Fu, L., Ren, H., Wang, C., Zhao, Y., Zou, B., & Zhang, X. **(2025)**. Formation of PEG-PLGA Microspheres for Controlled Release of Simvastatin and Carvacrol: Enhanced Lipid-Lowering Efficacy and Improved Patient Compliance in Hyperlipidemia Therapy. *Polymers*, *17*(5), 574–574. https://doi.org/10.3390/polym17050574
- Fujisawa, H., Suma, K., Origuchi, K., Kumagai, H., Seki, T., & Ariga, T. **(2008)**. Biological and chemical stability of Garlic-Derived allicin. *Journal of Agricultural and Food Chemistry*, *56*(11), 4229–4235. https://doi.org/10.1021/jf8000907
- Gabardo, R. S., De Carvalho Cotre, D. S., Arias, M. J. L., Moisés, M. P., Ferreira, B. T. M., Samulewski, R. B., Hinestroza, J. P., & Bezerra, F. M. **(2021)**. Surface modification of polyester fabrics by ozone and its effect on coloration using disperse dyes. *Materials*, *14*(13), 3492. https://doi.org/10.3390/ma14133492
- Gambichler, T., Hatch, K. L., Avermaete, A., Bader, A., Herde, M., Altmeyer, P., & Hoffmann, K. **(2002)**. Ultraviolet protection factor of fabrics: comparison of laboratory and field-based measurements. *Photodermatology, Photoimmunology & Photomedicine*, *18*(3), 135–140. https://doi.org/10.1034/j.1600-0781.2001.00739.x
- Ganesh, R. S., Gitanjali, C.C., Naresh, R. J., & Zambare, K.K. **(2021)**. Formulation, Development and Evaluation of Modified Release Floating Tablets of Mosapride Citrate. *World Journal of Pharmacy and Pharmaceutical Sciences*, *10*(8), 1754–1769. ISSN 2278-4357.
- Gao, Y., & Cranston, R. **(2008)**. Recent advances in antimicrobial treatments of textiles. *Textile research journal*, *78*(1), 60-72. https://doi.org/10.1177/0040517507082332
- Ge, X., Cao, Z., & Chu, L. **(2022)**. The Antioxidant Effect of the Metal and Metal-Oxide Nanoparticles. *Antioxidants*, *11*(4), 791. https://doi.org/10.3390/antiox11040791
- Ghani, S. S., & Hussain, I. **(2021)**. Dates (*Phoenix Dactylifera* L.) extracts derived nanoparticles and its application. *Current Chemistry Letters*, 235–254. https://doi.org/10.5267/j.ccl.2021.1.007
- Gong, J., Liang, C., Majeed, Z., Tian, M., Zhao, C., Luo, M., & Li, C. **(2023)**. Advances of Imidazolium Ionic Liquids for the Extraction of Phytochemicals from Plants. *Separations*, *10*(3), 151. https://doi.org/10.3390/separations10030151
- Gopinath, K., Devi, N. P., Govindarajan, M., Bhakyaraj, *et al…* Benelli, G. **(2017)**. One-Pot Green Synthesis of Silver Nanoparticles Using the Orchid Leaf Extracts of *Anoectochilus elatus*: Growth Inhibition Activity on Seven Microbial Pathogens. *Journal of Cluster Science*, *28(3)*, 1541–1550. doi:10.1007/s10876-017-1164-6
- Grant, W.F., **(1999)**. Higher plant assays for the detection of chromosomal aberrations and gene mutations—a brief historical background on their use for screening and monitoring environmental chemicals. *Mutat. Res. Fundam. Mol. Mech. Mutagen. 426 (2)*, 107–112
- Guerra, L. R., De Souza, A. M. T., *et al*.. & Alves, G. G. **(2017)**. Assessment of predictivity of volatile organic compounds carcinogenicity and mutagenicity by freeware *in silico* models. *Regulatory Toxicology and Pharmacology*, *91*, 1–8. https://doi.org/10.1016/j.yrtph.2017.09.030
- Guinart, A., Perry, H. L., Wilton-Ely, J. D. E. T., & Tetley, T. D. **(2020)**. Gold nanomaterials in the management of lung cancer. *Emerging Topics in Life Sciences*, *4*(6), 627–643. https://doi.org/10.1042/etls20200332
- Gulcin, I. **(2012)**. Antioxidant activity of food constituents: An overview. *Arch. Toxicol. 86*, 345–391
- Gülçin,I.,& Alwasel, S. **(2023)**. DPPH radical scavenging assay. *Processes*, *11*(8), 2248–2248. https://doi.org/10.3390/pr11082248
- Gupta, D. **(2007)**. Antimicrobial treatments for textiles. *Indian Journal of Fibre and Textile Research*, *322*, 54-263
- Gurav, D. D., Jia, Y., Ye, J., & Qian, K. **(2018)**. Design of plasmonic nanomaterials for diagnostic spectrometry. *Nanoscale Advances*, *1*(2), 459–469. https://doi.org/10.1039/c8na00319j
- Habib, H. M., & Ibrahim, W. H. **(2009)**. Nutritional quality evaluation of eighteen date pit varieties. *International Journal of Food Sciences and Nutrition*, *60*(sup1), 99–111. https://doi.org/10.1080/09637480802314639
- Habibullah, G., Viktorova, J., Ulbrich, P., & Ruml, T. **(2022)**. Effect of the physicochemical changes in the antimicrobial durability of green synthesized silver nanoparticles during their long-term storage. *RSC Advances*, *12(47)*, 30386–30403. https://doi.org/10.1039/d2ra04667a
- Haiss, W., Thanh, N. T. K., Aveyard, J., & Fernig, D. G. **(2007)**. Determination of Size and Concentration of Gold Nanoparticles from UV−Vis Spectra. *Analytical Chemistry*, *79(11)*, 4215–4221. doi:10.1021/ac0702084
- Hameed, S., Wang, Y., Zhao, L., Xie, L., & Ying, Y. **(2020)**. Shape-dependent significant physical mutilation and antibacterial mechanisms of gold nanoparticles against foodborne bacterial pathogens (*Escherichia coli*, *Pseudomonas aeruginosa* and *Staphylococcus aureus*) at lower concentrations. *Materials science & engineering. C, Materials for biological applications*, *108*, 110338. https://doi.org/10.1016/j.msec.2019.110338
- Hammami, I., Alabdallah, N. M., Komaa, A. A., & Kamoun, M. **(2021)**. Gold nanoparticles: Synthesis properties and applications. *Journal of King Saud University - Science*, *33(7)*, 101560. https://doi.org/10.1016/j.jksus.2021.101560
- Han, Q., Setchi, R., & Evans, S. L. **(2016)**. Synthesis and characterisation of advanced ball-milled Al-Al_2O_3 nanocomposites for selective laser melting. *Powder Technology*, *297*, 183–192. https://doi.org/10.1016/j.powtec.2016.04.015
- Han, Y., Gao, J., Yin, Y., Jin, Z., Xu, X., & Chen, H. **(2016b)**. Extraction optimization by response surface methodology of mucilage polysaccharide from the peel of *Opuntia dillenii* haw fruits and their physicochemical properties. *Carbohydrate Polymers*, *151*, 381–391. https://doi.org/10.1016/j.carbpol.2016.05.085
- Han, Y., Zhang, J., Hu, C. Q., Zhang, X., Ma, B., & Zhang, P. **(2019)**. *In silico* ADME and Toxicity Prediction of Ceftazidime and Its Impurities. *Frontiers in Pharmacology*, *10*, 434. https://doi.org/10.3389/fphar.2019.00434
- Hancharova, M., Halicka-Stępień, K., *et al*.. & Cabaj, J. **(2024)**. Antimicrobial activity of metal-based nanoparticles: a mini-review. *BioMetals*, *37*(4), 773–801. https://doi.org/10.1007/s10534-023-00573-y

References

- Harish, K. K., Nagasamy, V., Himangshu, B., & Anuttam, K. **(2018)**. Metallic Nanoparticle: A Review. *Biomed J Sci &Tech Res*, *4*(2). https://doi.org/10.26717/BJSTR.2018.04.001011
- Harris, J., S, C., S, P., & D, L. **(2001)**. Antimicrobial properties of *Allium sativum* (garlic). *Applied Microbiology and Biotechnology*, *57*(3), 282–286. https://doi.org/10.1007/s002530100722
- Hasan, I., Paul, S., Akhter, S., Ayon, N. J., & Reza, M. S. **(2014)**. Evaluation and optimization of influence of permeability property and concentration of polymethacrylic polymers on microspheres of metformin HCL. *Dhaka University Journal of Pharmaceutical Sciences*, *12*(2), 131–141. https://doi.org/10.3329/dujps.v12i2.17611
- Havale, S.H., & Pal, M. **(2009)**. Medicinal chemistry approaches to the inhibition of dipeptidyl peptidase-4 for the treatment of type 2 diabetes. *Bioorg Med Chem*, *17(5)*,1783-802. doi: 10.1016/j.bmc.2009.01.061.
- He, Y., Wei, F., Ma, Z., Zhang, H., Yang, Q., Yao, B., Huang, Z., Li, J., Zeng, C., & Zhang, Q. **(2017)**. Green synthesis of silver nanoparticles using seed extract of *Alpinia katsumadai*, and their antioxidant, cytotoxicity, and antibacterial activities. *RSC Advances*, *7(63)*, 39842–39851. https://doi.org/10.1039/c7ra05286c
- Holst, J. J. **(2007)**. The physiology of glucagon-like peptide 1. *Physiological Reviews*, *87*(4), 1409–1439. https://doi.org/10.1152/physrev.00034.2006
- Honary, S., & Zahir, F. **(2013a)**. Effect of Zeta potential on the properties of Nano-Drug delivery Systems - a review (Part 2). *Tropical Journal of Pharmaceutical Research, 12(2).* https://doi.org/10.4314/tjpr.v12i2.20
- Hosny, M., Eltaweil, A. S., Mostafa, M., El-Badry, Y. A., Hussein, E. E., Omer, A. M., & Fawzy, M. **(2022)**. Facile Synthesis of Gold Nanoparticles for Anticancer, Antioxidant Applications, and Photocatalytic Degradation of Toxic Organic Pollutants. *ACS Omega*, *7*(3), 3121–3133. https://doi.org/10.1021/acsomega.1c06714
- Hovhannisyan, Z., Timotina, M., *et al*…. & Nasim, M. J. **(2022)**. *Ribes nigrum* L. Extract-Mediated Green Synthesis and Antibacterial Action Mechanisms of Silver Nanoparticles. *Antibiotics*, *11*(10), 1415. https://doi.org/10.3390/antibiotics11101415
- Howes, M.-J., & Simmonds, M. **(2005)**. Plants Used in the Treatment of Diabetes. *Traditional Herbal Medicines for Modern Times*. https://doi.org/10.1201/9781420019001.ch2
- Hu, X., Zhang, Y., Ding, T., Liu, J., & Zhao, H. **(2020)**. Multifunctional Gold nanoparticles: a novel nanomaterial for various medical applications and biological activities. *Frontiers in Bioengineering and Biotechnology*, *8*, 990. https://doi.org/10.3389/fbioe.2020.00990
- Huang, J., & Xie, W. **(2010)**. Extraction of Rutin from *Flos Sophorae Immaturus* with an Aqueous 1-Butyl-3-methylimidazolium Chloride Solution. *Analytical Sciences*, *26*(3), 383–386. https://doi.org/10.2116/analsci.26.383
- Huang, X., & El-Sayed, M. A. **(2010)**. Gold nanoparticles: Optical properties and implementations in cancer diagnosis and photothermal therapy. *Journal of Advanced Research*, *1*(1), 13–28. https://doi.org/10.1016/j.jare.2010.02.002
- Husen, A., & Siddiqi, K. S. **(2014)**. Phytosynthesis of nanoparticles: concept, controversy and application. *Nanoscale Research Letters*, *9*(1). https://doi.org/10.1186/1556-276x-9-229
- Iberl, B., Winkler, G., & Knobloch, K. **(1990)**. Products of Allicin Transformation: Ajoenes and Dithiins, Characterization and their Determination by HPLC. *Planta Medica*, *56*(02), 202–211. https://doi.org/10.1055/s-2006-960926
- Ibrahim, S., El-Zaher, N., & Micheal, M. **(2010)**. Characterization and evaluation of physico-chemical properties of polymeric fabrics treated with UV/ozone. *Research Journal of Textile and Apparel*, *14*(2), 59-71.
- Ider, M., Abderrafi, K., Eddahbi, A., Ouaskit, S., & Kassiba, A. **(2016)**. Silver Metallic Nanoparticles with Surface Plasmon Resonance: Synthesis and Characterizations. *Journal of Cluster Science*, *28(3)*, 1051–1069. https://doi.org/10.1007/s10876-016-1080-1
- Igarashi, M., & Miyazawa, T. **(2001)**. The growth inhibitory effect of conjugated linoleic acid on a human hepatoma cell line, HepG2, is induced by a change in fatty acid metabolism, but not the facilitation of lipid peroxidation in the cells. *Biochimica et Biophysica Acta (BBA) - Molecular and Cell Biology of Lipids*, *1530*(2-3), 162–171. https://doi.org/10.1016/s1388-1981(00)00180-3
- Imath, M., Ragavendran, C., Kamaraj, C., *et al*.….& Prathap, L. **(2024)**. *Fioria vitifolia*-mediated silver nanoparticles: Eco-friendly synthesis and biomedical potential. *Journal of Water Process Engineering*, *66*,106020. https://doi.org/10.1016/j.jwpe.2024.106020
- International Agency for Research on Cancer. **(2024)**. *GLOBOCAN 2022: Latest global cancer data shows rising incidence and stark inequities*. Union for International Cancer Control.
- Iravani, S. **(2011)**. Green synthesis of metal nanoparticles using plants. *Green Chemistry*, *13*(10), 2638. https://doi.org/10.1039/c1gc15386b
- Irfan, M., Akram, A., Zahoor, A.F., *et al*…Nadeem, I.K. **(2016)**. Formulation Parameters affecting floating behaviour and drug release from extended release floating tablets of ranitidine hydrochloride, *Latin American journal of pharmacy*, *35*, 1206-16.
- Islam, N.U., Jalil, K., Shahid, M., Rauf, A., Muhammad, N., Khan, A., Shah, M.R., & Khan, M.A**. (2019)**. Green synthesis and biological activities of gold nanoparticles functionalized with Salix alba. *Arab. J. Chem. , 12*, 2914–2925.
- Jabar, J. M., Adedayo, T. E., & Odusote, Y. A. **(2021)**. Green, eco-friendly and sustainable alternative in dyeing cotton fabric using aqueous extract *Mucuna slonaei* F dye: effects of metal salts pre-mordanting on color strength and fastness properties. *Current Research in Green and Sustainable Chemistry*, *4*, 100151. https://doi.org/10.1016/j.crgsc.2021.100151
- Jacinto, T. A., Oliveira, B., Miguel, S. P., Ribeiro, M. P., & Coutinho, P. **(2022)**. Ciprofloxacin-Loaded Zein/Hyaluronic acid nanoparticles for ocular mucosa delivery. *Pharmaceutics*, *14*(8), 1557. https://doi.org/10.3390/pharmaceutics14081557
- Jafari, S. M., Rashidinejad, A., & Simal-Gandara, J. **(2022)**. *Handbook of Food Bioactive Ingredients*. https://doi.org/10.1007/978-3-030-81404-5
- Jain, S. K., Velusamy, T., Croad, J. L., Rains, J. L., & Bull, R. **(2009)**. l-Cysteine supplementation lowers blood glucose, glycated hemoglobin, CRP, MCP-1, and oxidative stress and inhibits NF-κB activation in the livers of Zucker diabetic rats. *Free Radical Biology and Medicine*, *46*(12), 1633–1638. https://doi.org/10.1016/j.freeradbiomed.2009.03.014
- Jain, S., Mehra, N., Kumar, A., & Gaurav Saraogi. **(2011)**. Development and evaluation of sustained release matrix tablet of lamivudine. *International Journal of Pharmaceutical Sciences and Research*, *2(2)*. https://doi.org/10.13040/ijpsr.0975-8232.2(2).454-61
- Jallali, I., Hédi, A., Nouir, R., Hannachi, H., & Essghaier, B. **(2024)**. Green synthesis of silver nanoparticles from *Fraxinus angustifolia* Vahl. Extract: Characterization and assessment of their biological activities. *Biocatalysis and Agricultural Biotechnology*, *57*, 103086. https://doi.org/10.1016/j.bcab.2024.103086
- James J., T. Arun Kumar, C., *et al*… & V. Thankamani., **(2011)**. *In vitro* antioxidant activity of flowers and fruits of *Alstonia scholaris*, ABIM - *An Annotated Bibliography of Indian Medicine*, *3*, 475-479.

References

- Jawad, K. H., Jamagh, F. K., Sulaiman, G. M., Hasoon, B. A., Salim Albukhaty, Mohammed, H. A., & Abomughaid, M. M. **(2024)**. Antibacterial and antibiofilm activities of amikacin-conjugated gold Nanoparticles: A promising formulation for contact lens preservation. *Inorganic Chemistry Communications/Inorganic Chemistry Communications*, *162*, 112286–112286. https://doi.org/10.1016/j.inoche.2024.112286
- Jemal, K., Sandeep, B. V., & Pola, S. **(2017)**. Synthesis, Characterization, and Evaluation of the Antibacterial Activity of *Allophylus serratus* Leaf and Leaf Derived Callus Extracts Mediated Silver Nanoparticles. *Journal of Nanomaterials*, 1–11. https://doi.org/10.1155/2017/4213275
- Jessop, P. G., Jessop, D. A., Fu, D., & Phan, L. **(2012)**. Solvatochromic parameters for solvents of interest in green chemistry. *Green Chemistry*, *14*(5), 1245. https://doi.org/10.1039/c2gc16670d
- Jiang, M., Zhao, M., Zhou, Z., Huang, T., Chen, X., & Wang, Y. **(2011)**. Isolation of cellulose with ionic liquid from steam exploded rice straw. *Industrial Crops and Products*, *33*(3), 734–738. https://doi.org/10.1016/j.indcrop.2011.01.015
- Jiménez-Castellanos, M. R., Zia H., & Rhodes, C. T. **(1994)**. Design and testing in vitro of a bioadhesive and floating drug delivery system for oral application, *International Journal of Pharmaceutics, 105(1)*, 65-70.
- Jini, D., Sharmila, S., Anitha, A., Pandian, M., & Rajapaksha, R. M. H. **(2022)**. *In vitro* and *in silico* studies of silver nanoparticles (AgNPs) from *Allium sativum* against diabetes. *Scientific Reports*, *12*(1), 22109. https://doi.org/10.1038/s41598-022-24818-x
- Kalai, F. Z., Boulaaba, M., Ferdousi, F., & Isoda, H. **(2022)**. Effects of isorhamnetin on diabetes and its associated complications: a review of *in vitro* and *in vivo* studies and a post hoc transcriptome analysis of involved molecular pathways. *International Journal of Molecular Sciences, 23(2),* 704. https://doi.org/10.3390/ijms23020704
- Kan, C.-W., & Man, W.-S. **(2017)**. Enhancing Dark Shade Pigment Dyeing of Cotton Fabric Using Plasma Treatment. *Coatings*, *7(7)*, 104. https://doi.org/10.3390/coatings7070104
- Kanipandian, N., & Thirumurugan, R. **(2014)**. A feasible approach to phyto-mediated synthesis of silver nanoparticles using industrial crop *Gossypium hirsutum* (cotton) extract as stabilizing agent and assessment of its in vitro biomedical potential. *Industrial Crops and Products*, *55*, 1–10. https://doi.org/10.1016/j.indcrop.2014.01.042
- Kantouch, A., Khalil, E., Mowafi, S., & El-Sayed, H. **(2013)**. Antimicrobial finishing of wool fabric using ionic liquids. *Journal of the Textile Institute*, *104*(4), 363-369.
- Kaur, N., Kumar, V., Nayak, S. K., Wadhwa, P., Kaur, P., & Sahu, S. K. **(2021)**. Alpha- amylase as molecular target for treatment of diabetes mellitus: A comprehensive review. *Chemical Biology & Drug Design.* doi:10.1111/cbdd.13909
- Kedare, S. B., & Singh, R. P. **(2011)**. Genesis and development of DPPH method of antioxidant assay. *Journal of Food Science and Technology, 48(4),* 412–422. doi:10.1007/s13197-011-0251-1
- Kemala, T., Budianto, E., & Soegiyono, B. **(2012)**. Preparation and characterization of microspheres based on blend of poly(lactic acid) and poly(ε -caprolactone) with poly(vinyl alcohol) as emulsifier. *Arabian Journal of Chemistry*, *5*(1), 103–108. https://doi.org/10.1016/j.arabjc.2010.08.003
- Kerry, R. G., Mahapatra, S. R., Nayak, S., Naik, H., Kisku, K., Panigrahi, B., Misra, N., & Majhi, S. **(2025)**. *In silico* analysis of Rutin and Morin against diabetes-associated molecular targets. *In Silico Pharmacology*, *13(2)*, 68. https://doi.org/10.1007/s40203-025-00353-1
- Khalir, W. K. a. W. M., Shameli, K., Jazayeri, S. D., Othman, N. A., Jusoh, N. W. C., & Hassan, N. M. **(2020)**. Biosynthesized Silver Nanoparticles by Aqueous Stem Extract of *Entada spiralis* and Screening of Their Biomedical Activity. *Frontiers in Chemistry*, *8*, 620. https://doi.org/10.3389/fchem.2020.00620
- Khan, A. W., Lali, N. S., Sabei, F. Y., Irfan, M. I., *et al…* Amin, H. M., & Abbas, A. **(2024)**. Sunlight-assisted green synthesis of gold nanocubes using horsetail leaf extract: A highly selective colorimetric sensor for Pb^{2+}, photocatalytic and antimicrobial agent. *Journal of Environmental Chemical Engineering*, *12*(3), 112576. https://doi.org/10.1016/j.jece.2024.112576
- Khan, H. A., Ghufran, M., Shams, S., Jamal, A., Khan, A., Abdullah, N., Awan, Z. A., & Khan, M. I. **(2023)**. Green synthesis of silver nanoparticles from plant *Fagonia cretica* and evaluating its anti-diabetic activity through indepth *in-vitro* and *in-vivo* analysis. *Frontiers in Pharmacology*, *14*, 1194809. https://doi.org/10.3389/fphar.2023.1194809
- Khan, I., Saeed, K., & Khan, I. **(2017)**. Nanoparticles: Properties, applications and toxicities. *Arabian Journal of Chemistry*, *12*(7), 908–931. https://doi.org/10.1016/j.arabjc.2017.05.011
- Khan, S., Rauf, A., Aljohani, A.S.M. *et al.* **(2024b)**. Green synthesis of silver and gold nanoparticles in *Callistemon viminalis* extracts and their antimicrobial activities. *Bioprocess Biosyst Eng*. https://doi.org/10.1007/s00449-024-02994-6
- Khan, T., Ullah, N., Khan, M. A., Mashwani, Z., & Nadhman, A. **(2019)**. Plant-based gold nanoparticles; a comprehensive review of the decade-long research on synthesis, mechanistic aspects and diverse applications. *Advances in Colloid and Interface Science*, *272*, 102017. https://doi.org/10.1016/j.cis.2019.102017
- Khodeer, D. M., Nasr, A. M., Swidan, S. A., Shabayek, S., Khinkar, R. M., Aldurdunji, M. M., Ramadan, M. A., & Badr, J. M. **(2023)**. Characterization, antibacterial, antioxidant, antidiabetic, and anti-inflammatory activities of green synthesized silver nanoparticles using *Phragmanthera austroarabica* A. G. Mill and J. A. Nyberg extract. *Frontiers in Microbiology*, *13*, 1078061. https://doi.org/10.3389/fmicb.2022.1078061
- Kim, J.Y., Shin, E.J., Eom, I.Y., Won, K., Kim, Y. H., Choi, D., Choi, I.G., & Choi, J. W. **(2011)**. Structural features of lignin macromolecules extracted with ionic liquid from poplar wood. *Bioresource Technology*, *102*(19), 9020–9025. https://doi.org/10.1016/j.biortech.2011.07.081
- Kondorskiy, A. D., Lam, N. T., & Lebedev, V. S. **(2018)**. Absorption and scattering of light by silver and gold nanodisks and nanoprisms. *Journal of Russian Laser Research*, *39(1)*, 56–66. https://doi.org/10.1007/s10946-018-9689-1
- Kotha, A. A., Ahmad, S. U., Dewan, I., Bhuiyan, M. A., Rahman, F. I., Naina Mohamed, I., & Reza, M. S. **(2023)**. Metformin Hydrochloride Loaded Mucoadhesive Microspheres and Nanoparticles for Anti-Hyperglycemic and Anticancer Effects Using Factorial Experimental Design. *"Drug Design, Development and Therapy*, *17*, 3661–3684. https://doi.org/10.2147/DDDT.S432790
- Kuang, G., Zhang, Z., Shi, L., Zhou, D., Lu, X., Jing, X., & Huang, Y. **(2018)**. Biphasic drug release from electrospun polyblend nanofibers for optimized local cancer treatment. *Biomaterials Science*, *6(2)*, 324–331. https://doi.org/10.1039/c7bm01018d
- Kulkarni,A., Yunus, R., & Dehghan, M. **(2008)**. Application of Neem Gum for Aqueous Film Coating of Ciprofloxacin Tablets, *International Journal of Applied Research in Natural Products, 6 (3)*, 11-19.

- Kumar, A., Sharma, M., & Rahul Vaish. **(2022)**. Durable antibacterial cotton fabric via spray-coating of photocatalytic MoS_2. *Materials Chemistry and Physics*, *290*, 126658–126658. https://doi.org/10.1016/j.matchemphys.2022.126658
- Kumari, M., Mukherjee, A., & Chandrasekaran, N. **(2009)**. Genotoxicity of silver nanoparticles in *Allium cepa*. *Science of The Total Environment, 407(19)*, 5243–5246. doi:10.1016/j.scitotenv.2009.06.024
- Kumari, V., Sukriti Vishwas, Kumar, R., *et al*… & Sachin Kumar Singh. **(2023)**. An overview of biomedical applications for gold nanoparticles against lung cancer. *Journal of Drug Delivery Science and Technology*, *86*, 104729–104729. https://doi.org/10.1016/j.jddst.2023.104729
- Kwak, W.-G., Oh, M. H., & Gong, M.-S. **(2015)**. Preparation of silver-coated cotton fabrics using silver carbamate via thermal reduction and their properties. *Carbohydrate polymers*, *115*, 317-324.
- Lafta, M. Z., Hameed Al-Samarrai, R. R., & Bouaziz, M. **(2025)**, Green synthesis of silver and gold nanoparticles using quercetin extracted from *Arctium lappa* by HPLC, Characterization and Estimation of antioxidant activity. *Results in Chemistry*, *13*, 102028. https://doi.org/10.1016/j.rechem.2025.102028
- Lam, N. T., Kondorskiy, A. D., & Lebedev, V. S. **(2019)**. Extinction Spectra of bilayer organometallic nanoplatelets. *Bulletin of the Lebedev Physics Institute, 46(12)*, 390–394. https://doi.org/10.3103/s1068335619120066
- Lam, Y. L., Kan, C. W., & Yuen, C. W. **(2011)**. Effect of oxygen plasma pretreatment and titanium dioxide overlay coating on flame retardant finished cotton fabrics. *BioResources*, *6*(2), 1454-1474.
- Laracuente, M., Yu, M. H., & McHugh, K. J. **(2020)**. Zero-order drug delivery: State of the art and future prospects. *Journal of Controlled Release*, *327*, 834–856. https://doi.org/10.1016/j.jconrel.2020.09.020
- Latha, R., Sevarkodiyone, S. P., & Pandiarajan, J. (2021). Multi-Faceted Role of Silver and Gold Nanoparticles Synthesized from Biowaste and its *in vitro* Antibacterial, Antifungal and Antidiabetic Activities. *Letters in Applied NanoBioScience*, *11(1)*, 3076–3092. https://doi.org/10.33263/lianbs111.30763092
- Lawson, L., Wood, S., & Hughes, B. **(1991)**. HPLC Analysis of Allicin and Other Thiosulfinates in Garlic Clove Homogenates. *Planta Medica*, *57(03)*, 263–270. https://doi.org/10.1055/s-2006-960087
- Lee, D. Y., Li, H., Lim, H. J., Lee, H. J., Jeon, R., & Ryu, J. **(2012)**. Anti-Inflammatory Activity of Sulfur-Containing Compounds from Garlic. *Journal of Medicinal Food*, *15*(11), 992–999. https://doi.org/10.1089/jmf.2012.2275
- Lee, S. H., & Jun, B.H. **(2019)**. Silver Nanoparticles: Synthesis and Application for Nanomedicine. *International Journal of Molecular Sciences*, *20*(4), 865. https://doi.org/10.3390/ijms20040865
- Levine, M., Ramsey, S.C., Daruwara, R. **(1991)**. Criteria and recommendation for Vitamin C intake. *JAMA*;*281*, 1415–23
- Li, Z., Zhang, Y., Xia, W., Tang, Y., & Li, Q. *(2023)*. Producing natural-colored super-powerful antibacterial cotton with plasma-assisted fiber surface modification: a green and effective cotton process for medical and healthcare applications. *Materials Advances*. https://doi.org/10.1039/d2ma00701k
- Liang, Y., Cheng, W., Chen, L., Sheu, M., & Lin, H. **(2023)**. Development of a swellable and floating gastroretentive drug delivery system (SFGRDDS) of ciprofloxacin hydrochloride. *Pharmaceutics*, *15*(5), 1428. https://doi.org/10.3390/pharmaceutics15051428
- Lim, J. R., Chua, L. S., & Mustaffa, A. A. **(2022)**. Ionic liquids as green solvent and their applications in bioactive compounds extraction from plants. *Process Biochemistry*, *122*, 292–306. https://doi.org/10.1016/j.procbio.2022.10.024
- Lipinski, C. A., Lombardo, F., Dominy, B. W., & Feeney, P. J. **(2001)**. Experimental and computational approaches to estimate solubility and permeability in drug discovery and development settings 1PII of original article: S0169-409X(96)00423-1. The article was originally published in Advanced Drug Delivery Reviews 23 (1997) 3–25. 1. *Advanced Drug Delivery Reviews*, 46(1–3), 3–26. https://doi.org/10.1016/s0169-409x(00)00129-0
- Lister, J. **(1967)**. Antiseptic principle in the practice of surgery. *British Medical Journal*, *2*(5543), 9.
- Liu, S., Ren, P., Wang, G., Yao, S., & He, X. **(2014)**. Allicin protects spinal cord neurons from glutamate-induced oxidative stress through regulating the heat shock protein 70/inducible nitric oxide synthase pathway. *Food & Function*, *6*(1), 320–329. https://doi.org/10.1039/c4fo00761a
- Liu, Z., Zhang, Z., Du, X., Liu, Y., & Zhang, Z. **(2023)**. Formulation of a novel anti-lung cancer drug: Vanadium nanoparticles containing *Salvia officinalis*. *Inorganic Chemistry*.
- Madhu, A., Cherian, I., & Gautam, A. K. **(2022)**. Interdisciplinary approach to biomedical research: a panacea to efficient research output during the global pandemic. In *Elsevier eBooks* (pp. 331–347). https://doi.org/10.1016/b978-0-323-85156-5.00018-3
- Madhu, A., Singh, N., Kaur, A., & Prakash Sahu, O. **(2022b)**. UV protective fabric for face covering utility article using TiO_2 nanoparticles. *Materials Today: Proceedings*, *68*, 1022–1029. https://doi.org/10.1016/j.matpr.2022.08.252
- Mai-Prochnow, A., Clauson, M., Hong, J., & Murphy, A. B. **(2016)**. Gram positive and Gram negative bacteria differ in their sensitivity to cold plasma. *Scientific Reports*, *6(1)*, 38610. https://doi.org/10.1038/srep38610
- Mallick, K., Witcomb, M. J., & Scurrell, M. S. (2004). Polymer stabilized silver nanoparticles: A photochemical synthesis route. *Journal of Materials Science*, *39(14)*, 4459–4463. https://doi.org/10.1023/b:jmsc.0000034138.80116.50
- Mangalampalli, B., Dumala, N., & Grover, P. **(2018)**. *Allium cepa* root tip assay in assessment of toxicity of magnesium oxide nanoparticles and microparticles. *Journal of Environmental Sciences*, *66*, 125–137. https://doi.org/10.1016/j.jes.2017.05.012
- Marchese, A., Barbieri, R., Sanches-Silva, A., Daglia, M., Nabavi, S. F., Jafari, N. J., Izadi, M., Ajami, M., & Nabavi, S. M. **(2016)**. Antifungal and antibacterial activities of allicin: A review. *Trends in Food Science & Technology*, *52*, 49–56. https://doi.org/10.1016/j.tifs.2016.03.010
- Mathur, P., Saroha, K., Syan, N., Verma, S., Kumar, V. **(2010)**. Floating drug delivery systems: An innovative acceptable approach in gastroretentive drug delivery. *Arch Apll Sci Res*, *2*, 257–70.
- Mejía-Méndez, J. L., López-Mena, E. R., & Sánchez-Arreola, E. **(2023)**. Activities against Lung Cancer of Biosynthesized Silver Nanoparticles: A Review. *Biomedicines*, *11*(2), 389. https://doi.org/10.3390/biomedicines11020389
- Mekshun, A. V., Moritaka, S. S., Kondorskii, A. D., & Lebedev, V. S. **(2020)**. Comparative Analysis of Optical Spectra of Plasmonic Nanoparticles of Different Geometrical Shapes. *Bulletin of the Lebedev Physics Institute, 47(9)*, 276–279. https://doi.org/10.3103/s1068335620090031
- Menon, S., S., R., & S., V. K. **(2017)**. A review on biogenic synthesis of gold nanoparticles, characterization, and its applications. *Resource-Efficient Technologies*, *3*(4), 516–527. https://doi.org/10.1016/j.reffit.2017.08.002

References

- Mentlein, R., Gallwitz, B., & Schmidt, W. E. **(1993)**. Dipeptidyl- peptidase IV hydrolyses gastric inhibitory polypeptide, glucagon-like peptide- 1(7–36) amide, peptide histidine methionine and is responsible for their degradation in human serum. *European Journal of Biochemistry*, *214*(3), 829–835. https://doi.org/10.1111/j.1432-1033.1993.tb17986.x
- Michael, M., El-Zaher, N., & Ibrahim, S. **(2004)**. Investigation into surface modification of some polymeric fabrics by UV/ozone treatment. *Polymer-Plastics Technology and Engineering*, *43*(4), 1041-1052.
- Michelin, D. C., Sannomiya, M., Figueiredo, M. E., Rinaldo, *et al* . . . Salgado, H. **(2008)**. Antimicrobial activity of Byrsonima species (Malpighiaceae). *Revista Brasileira de Farmacognosia*, *18*, 690-695.
- Mishra, A., Tripathy, S. K., & Yun, S.-I. **(2012)**. Fungus mediated synthesis of gold nanoparticles and their conjugation with genomic DNA isolated from *Escherichia coli* and *Staphylococcus aureus*. *Process Biochemistry*, *47(5)*, 701–711. doi:10.1016/j.procbio.2012.01.017
- Mishra, S., & Dahima, R. **(2019)**. *In vitro* adme studies of tug-891, a gpr-120 inhibitor using swiss adme predictor. *Journal of Drug Delivery and Therapeutics*, *9*(2), 366–369. https://doi.org/10.22270/jddt.v9i2-s.2710
- Mishra, S., Shukla, P., Chumbhale, D. S., Dutta, P., Vellingiri, D., & Tiwari, R. **(2025)**. Exploring the Potential of Gastro Retentive Drug Delivery Systems: An Insightful Perspective. *International Journal of Pharmaceutical Investigation*, *15*(3), 703–724. https://doi.org/10.5530/ijpi.20250244
- Mohamadizadeh, M., Dehghan, P., Azizi-Soleiman, F., & Maleki, P. **(2024)**. Effectiveness of date seed on glycemia and advanced glycation end-products in type 2 diabetes: a randomized placebo-controlled trial. *Nutrition and Diabetes*, *14(1)*, 37. https://doi.org/10.1038/s41387-024-00287-1
- Mohammed, K. P., Aarey, A., Tamkeen, S., & Jahan, P. **(2015)**. Forskolin: Genotoxicity assessment in *Allium cepa*. *Mutation Research/Genetic Toxicology and Environmental Mutagenesis*, *777*, 29–32. doi:10.1016/j.mrgentox.2014.11.005
- Mohanta, Y. K., Panda, S. K., Jayabalan, R., Sharma, N., Bastia, A. K., & Mohanta, T. K. **(2017)**. Antimicrobial, antioxidant and cytotoxic activity of silver nanoparticles synthesized by leaf extract of *Erythrina suberosa* (Roxb.). *Frontiers in Molecular Biosciences*, *4*, 14.
- Momin, K. C., Sangma, A. N., Suresh, C. P., Singh, Y. S., & Rao, S. R. **(2018)**. Blood fruit [*Haematocarpus validus* (Miers) Bakh. f. ex Forman]–A potential nutraceutical and therapeutic fruit plant. *International Journal of Minor Fruits, Medicinal and Aromatic Plants*, *4*(1), 44-49.
- Mondal, S. **(2021)**. Nanomaterials for UV protective textiles. *Journal of Industrial Textiles*, *51*(45), 5592S-5621S. https://doi.org/10.1177/1528083721988949
- Moorthy, M., Roslan, M. F., Saravanan, G., & Teguh Widodo, R. **(2025)**. Formulation and In-vitro characterization of metformin microsphere for enhanced drug delivery via spray drying in type 2 diabetes management. *International Journal of Pharmaceutical Sciences and Research*, *16*(3). https://doi.org/10.13040/ijpsr.0975-8232.16(3).680-92
- Mostafa, H., Jennifer, O.A., & Maqsood, S. **(2022)**. A novel strategy for producing nano-particles from date seeds and enhancing their phenolic content and antioxidant properties using ultrasound-assisted extraction: A multivariate based optimization study. *Ultrasonics Sonochemistry*, *87*, 106017–106017.https://doi.org/10.1016/j.ultsonch.2022.106017
- Motaal, A. A., Salem, H. H., Almaghaslah, D., *et al*… & El-Askary, H. **(2020)**. Flavonol Glycosides: *In Vitro* Inhibition of DPPIV, Aldose Reductase and Combating Oxidative Stress are Potential Mechanisms for Mediating the Antidiabetic Activity of *Cleome droserifolia*. *Molecules*, 25(24*)*, 5864. https://doi.org/10.3390/molecules25245864
- Nadi, A., Boukhriss, A., Bentis, A., Jabrane, E., & Gmouh, S. **(2018)**. Evolution in the surface modification of textiles: a review. *Textile Progress*, *50*(2), 67-108.
- Nair, S., & Alka. **(2017)**, Assessment of Chemical Stability of Constituents in Thiosulfinate derivative-rich Extract of Garlic by a Validated HPTLC Method, *Indian J Pharm Sci*, *79(3)*, 438-450
- Narayanan, K.B., Sakthivel, N. **(2008)**. Coriander leaf mediated biosynthesis of gold nanoparticles. *Mater. Lett*, *62*, 4588–4590.
- Naseem, F., Shah, S. U., Rashid, S. A., Farid, A., Almehmadi, M., & Alghamdi, S. **(2022)**. Metronidazole Based Floating Bioadhesive Drug Delivery System for Potential Eradication of H. pylori: Preparation and *In vitro* Characterization. *Polymers*, *14*(3), 519. https://doi.org/10.3390/polym14030519
- Nassar, M., Aboutabl, E., Eskander, D., Grace, M., El-Khrisy, E., & Sleem, A. **(2013)**. Flavonoid glycosides and pharmacological activity of *Amphilophium paniculatum*. *Pharmacognosy Research*, *5*(1), 17. https://doi.org/10.4103/0974-8490.105643
- Nassar, M.I., Eskander, D.M., Abdel-Razik, A.F., El-Khrisy, E.-D., Aboutabl, E.-S., El-Beih, A.A. **(2013b)**. A new eudesmane phenolic acid ester from *Amphilophium paniculatum* (L.) Kunth, *Nat Prod Chem Res, 1 (4)*, 13-15.
- Nath, S., Shyanti, R. K., Singh, R. P., Mishra, M., & Pathak, B. **(2024)**. *Thespesialampas* mediated green synthesis of silver and gold nanoparticles for enhanced biological applications. *Frontiers in Microbiology*, *14*, 1324111. https://doi.org/10.3389/fmicb.2023.1324111
- Nawaz, H., Shad, M. A., Rehman, N., Andaleeb, H., & Ullah, N. **(2020)**. Effect of solvent polarity on extraction yield and antioxidant properties of phytochemicals from bean (*Phaseolus vulgaris*) seeds. *Brazilian Journal of Pharmaceutical Sciences*, *56*. https://doi.org/10.1590/s2175-97902019000417129
- Neely, A. N., & Maley, M. P. **(2000)**. Survival of enterococci and staphylococci on hospital fabrics and plastic. *Journal of clinical microbiology*, *38*(2), 724-726.
- Németh, Z., Csóka, I., Jazani, R. S., Sipos, B., Haspel, H., Kozma, G., Kónya, Z., & Dobó, D. G. **(2022)**. Quality by Design-Driven Zeta Potential Optimisation Study of Liposomes with Charge Imparting Membrane Additives. *Pharmaceutics*, *14(9)*, 1798. https://doi.org/10.3390/pharmaceutics14091798
- Nguyen, B. T., Hong, H. T., O'Hare, T. J., Wehr, J. B., Menzies, N. W., & Harper, S. M. **(2021)**. A rapid and simplified methodology for the extraction and quantification of allicin in garlic. *Journal of Food Composition and Analysis*, *104*, 104-114. doi:10.1016/j.jfca.2021.104114
- Nikhat, F., D.Satynarayana, & Evs, S. **(2009)**. Isolation, Characterisation and Screening of Antioxidant Activity of the Roots of *Syzygiumcuminii* (L) Skeel. *Asian Journal of Research in Chemistry*, *2*(2), 218–221.
- Nimgampalle, M., Devanathan, V., & Saxena, A. **(2021)**. Importance of *in silico* studies on the design of novel drugs from medicinal plants against 21st-century pandemics: past, present, and future. In *Elsevier eBooks* (pp. 211–223). https://doi.org/10.1016/b978-0-323-85662-1.00013-6

References

- Nining, N., Srifiana, Y., & Fadlianty, E. M **(2021)**. Preparation and characterization of enteric-coated delayed-release microsphere of phytosome loading allicin-rich extract. *International Journal of Applied Pharmaceutics*, 71–75. https://doi.org/10.22159/ijap.2021.v13s3.15
- Nisha, J. **(2017)**. Molecular Docking Analysis of Potential Dipeptidyl peptidase - 4 (DPP-4) Inhibitors from Siddha formulation *Pungampoo Chooranam* for treating Diabetes mellitus. *International Journal of Advanced Research in Biological Sciences (IJARBS)*, *4*(10), 78–85. https://doi.org/10.22192/ijarbs.2017.04.10.011
- Noorbazargan, H., Amintehrani, S., Dolatabadi, A., *et al*.... & Kavousi, M. **(2021)**. Anti-cancer & anti-metastasis properties of bioorganic-capped silver nanoparticles fabricated from Juniperus chinensis extract against lung cancer cells. *AMB Express*, *11*(1), 61. https://doi.org/10.1186/s13568-021-01216-6
- Ogurtsova, K., Da Rocha Fernandes, J., *et al*.... & Makaroff, L. **(2017)**. IDF Diabetes Atlas: Global estimates for the prevalence of diabetes for 2015 and 2040. *Diabetes Research and Clinical Practice*, *128*, 40–50. https://doi.org/10.1016/j.diabres.2017.03.024
- Ojaswi, L.P., & Ravindra, R.P. **(2010)**. Design and evaluation of garlic sustained release matrix tablets, *International Journal of Pharmaceutical Sciences Review and Research*, *4(1)*,100-106
- Oliveira, S. M. R., Rebocho, A., Ahmadpour, E., Nissapatorn, V., & De Lourdes Pereira, M. **(2023)**. Type 1 Diabetes mellitus: A review on advances and challenges in creating insulin producing devices. *Micromachines*, *14*(1), 151. https://doi.org/10.3390/mi14010151
- Omar, S. H., & Al-Wabel, N. A. **(2010)**. Organosulfur compounds and possible mechanism of garlic in cancer. *Saudi Pharmaceutical Journal*, *18*(1), 51–58. https://doi.org/10.1016/j.jsps.2009.12.007
- Onyeka, P. C. **(2025)**. *Moringa Oleifera* Bioactive Compounds as a Novel DPP-IV Inhibitor: An *In-Silico* Study. *Universal Library of Chemistry*, *Volume 1*(Issue 1).
- Oves, M., Rauf, M. A., & Qari, H. A. **(2023)**. Therapeutic Applications of Biogenic Silver Nanomaterial Synthesized from the Paper Flower of *Bougainvillea glabra* (Miami, Pink). *Nanomaterials*, *13(3)*, 615. https://doi.org/10.3390/nano13030615
- Ozin, G. A., & Cademartiri, L. **(2009)**. Nanochemistry: what is next?. *Small (Weinheim an der Bergstrasse, Germany)*, *5*(11), 1240–1244. https://doi.org/10.1002/smll.200900113
- Ozoude, C. H., Azubuike, C. P., Ologunagba, M. O., Tonuewa, S. S., & Igwilo, C. I. **(2020)**. Formulation and development of metformin-loaded microspheres using *Khaya senegalensis* (Meliaceae) gum as co-polymer. *Future Journal of Pharmaceutical Sciences*, *6*(1). https://doi.org/10.1186/s43094-020-00139-6
- Ozougwu, J., & Eyo, J. **(2010)**. Studies on the anti-diabetic activity of *Allium sativum* (garlic) aqueous extracts on alloxan-induced diabetic albino rat. *Pharmacologyonline*, *2*,1079-1088.
- Palva, R., Singh S., Prasad Verma P., & Praveen R **(2015)**. Controlled release microcapsules for oral delivery of aceclofenac formulation and characterization. *Res. J. Pharm. Technol*, *8*, 251–258. doi: 10.5958/0974-360X.2015.00042.6
- Park, S., Cho, S., Kwon, H., Lee, K., Rhee, D., & Pyo, S. **(2004)**. Caspase-independent cell death by allicin in human epithelial carcinoma cells: involvement of PKA. *Cancer Letters*, *224*(1), 123–132. https://doi.org/10.1016/j.canlet.2004.10.009
- Peng, H., Zhang, S., Chai, Q., & Hua, Z. **(2024)**. Green synthesis of gold nanoparticles using Acorus calamus leaf extract and study on their anti-alzheimer potential. *Biotechnology and Bioprocess Engineering*, *29*(1), 157–163. https://doi.org/10.1007/s12257-024-00010-y
- Perumalsamy, R., & Krishnadhas, L. **(2022)**. Anti-Diabetic Activity of Silver Nanoparticles Synthesized from the Hydroethanolic Extract of *Myristica fragrans* Seeds. *Applied Biochemistry and Biotechnology*, *194(3)*, 1136–1148. https://doi.org/10.1007/s12010-022-03825-8
- Petchi, R. R., Vijaya, C., & Parasuraman, S. **(2014)**. Antidiabetic activity of polyherbal formulation in streptozotocin – nicotinamide induced diabetic wistar rats. *Journal of Traditional and Complementary Medicine*, *4(2)*, 108–117. https://doi.org/10.4103/2225-4110.126174
- Pissuwan, D., Gazzana, C., Mongkolsuk, S., & Cortie, M. B. **(2019)**. Single and multiple detections of foodborne pathogens by gold nanoparticle assays. *Wiley Interdisciplinary Reviews Nanomedicine and Nanobiotechnology*, *12*(1), e1584. https://doi.org/10.1002/wnan.1584
- Poklepovich-Caride, S., Oestreicher, V., M. Mercedes Zalduendo, Bordoni, A. V., Galo J.A.A. Soler-Illia, & Angelomé, P. C. **(2022)**. A versatile one-pot room temperature approach for the synthesis of gold nanoparticles with multiple sizes and shapes. *Colloids and Surfaces. A, Physicochemical and Engineering Aspects*, *646*, 128890–128890. https://doi.org/10.1016/j.colsurfa.2022.128890
- Poletto, M., Ornaghi, H.L., Zattera, A.J. **(2014)**. Native Cellulose: Structure, Characterization and Thermal Properties. Materials (Basel).*7(9)*,6105-6119. doi: 10.3390/ma7096105.
- Poovitha, S., & Parani, M. **(2016)**. *In vitro* and *in vivo* α-amylase and α-glucosidase inhibiting activities of the protein extracts from two varieties of bitter gourd (*Momordica charantia* L.). *BMC Complement Altern Med*, *16* (Suppl 1), 185. https://doi.org/10.1186/s12906-016-1085-1
- Prabhakar, P.K., & Doble, M. **(2011)**. Mechanism of action of natural products used in the treatment of diabetes mellitus. *Chin J Integr Med*. *7(8)*,563-74. doi: 10.1007/s11655-011-0810-3.
- Prabu, H. J., & Johnson, I. **(2015)**. Plant-mediated biosynthesis and characterization of silver nanoparticles by leaf extracts of *Tragia involucrata*, *Cymbopogon citronella*, *Solanum verbascifolium* and *Tylophora ovata*. *Karbala International Journal of Modern Science*, *1(4)*, 237–246. https://doi.org/10.1016/j.kijoms.2015.12.003
- Pradeep, M., Kruszka, D., Kachlicki, P., Mondal, D., & Franklin, G. **(2021)**. Uncovering the Phytochemical Basis and the Mechanism of Plant Extract-Mediated Eco-Friendly Synthesis of Silver Nanoparticles Using Ultra-Performance Liquid Chromatography Coupled with a Photodiode Array and High-Resolution Mass Spectrometry. *ACS Sustainable Chemistry & Engineering*, *10*(1), 562–571. https://doi.org/10.1021/acssuschemeng.1c06960
- Prysiazhnyi, V., Kramar, A., Dojcinovic, B., Zekic, A., Obradovic, B., Kuraica, M. M., & Kostic, M. **(2013)**. Silver incorporation on viscose and cotton fibers after air, nitrogen and oxygen DBD plasma pretreatment. *Cellulose*, *20*, 315-325.
- Rahman, M. S. **(2007)**. Allicin and Other Functional Active Components in Garlic: Health Benefits and Bioavailability. *International Journal of Food Properties*, *10*(2), 245–268. https://doi.org/10.1080/10942910601113327
- Rajabi, S., Ramazani, A., Hamidi, M., & Naji, T. **(2015)**. *Artemia salina* as a model organism in toxicity assessment of nanoparticles. *DARU Journal of Pharmaceutical Sciences*, *23*(1). https://doi.org/10.1186/s40199-015-0105-x

References

- Rajalakshmi, R., Lalitha, P., & Sharma, S. C. **(2025)**. Ionic liquids-based extraction of natural products from plants −An overview. *Journal of Molecular Liquids*, 127226–127226. https://doi.org/10.1016/j.molliq.2025.127226
- Rajalakshmi, R., Lalitha, P., Parveen, M. S., & Jayalakshmi, P. **(2023)**. *In silico* and *in vitro* antimicrobial activity of date-palm aided silver nanoparticles conjugated with drug ampicillin for drug release study. *Materials Today Sustainability*, *23*, 100471–100471. https://doi.org/10.1016/j.mtsust.2023.100471
- Rajalakshmi, R., Lalitha, P., Sharma, S. C., Rajiv, A., Chithambharan, A., & Ponnusamy, A. **(2021)**. *In silico* studies: Physicochemical properties, drug score, toxicity predictions and molecular docking of organosulphur compounds against Diabetes mellitus. *Journal of Molecular Recognition*, *34*(11). https://doi.org/10.1002/jmr.2925
- Rajalakshmi, R., Lalitha, Pottail., Reena, S. P., Aruna, P., & Akhila, C. **(2021a)**. Biogenic synthesis of gold nanoparticles using *Haematocarpus validus* fruit ethanol extract and their antioxidant activity, J*ournal of advanced applied scientific research*, *3(4)*, 87–93. https://doi.org/10.46947/joaasr342021134
- Rajeshkumar, S., Malarkodi, C., Gnanajobitha, G., *et al…* & Annadurai, G. **(2013)**. Seaweed-mediated synthesis of gold nanoparticles using *Turbinaria conoides* and its characterization *Journal of Nanostructure in Chemistry*, 3(1). https://doi.org/10.1186/2193-8865-3-44
- Rajeshwari, A., Suresh, S., Chandrasekaran, N., & Mukherjee, A. **(2016b)**. Toxicity evaluation of gold nanoparticles using an *Allium cepa* bioassay. *RSCAdv*. *6(29)*,24000–24009.
- Ramalingam, V. **(2019)**. Multifunctionality of gold nanoparticles: Plausible and convincing properties. *Advances in Colloid and Interface Science*, *271*, 101989. https://doi.org/10.1016/j.cis.2019.101989
- Ramanamma, N. L., Pragnya, N. K., Likhitha, N. N., Bhargav, N. M., Pravallika, N. K., Narendra, N., & Panda, N. J. **(2025)**. Formulation and evaluation of herbal floating tablets. *GSC Biological and Pharmaceutical Sciences*, *30*(1), 152–162. https://doi.org/10.30574/gscbps.2025.30.1.0005
- Rani, K. V., Sarma, B., & Sarma, A. **(2018)**. Plasma treatment on cotton fabrics to enhance the adhesion of Reduced Graphene Oxide for electro-conductive properties. *Diamond and Related Materials*, *84*, 77-85.
- Rapunga Flory Hingba, & Chaurasiya, A. K. **(2023)**. Effect of blended fermented beverages from blood fruit and aonla with two types of organic sweetener. *Journal of Food Science and Technology*, *60*(5), 1505–1512. https://doi.org/10.1007/s13197-023-05691-6
- Rathore, S. K., Mohammad, A. R., Tiwari, A., Brahma, P. K., & Meher, V. K. **(2025)**. Formulation, development and evaluation of novel gastroretentive sustained release of Ciprofloxacin HCL Floating Matrix tablet. *Research Journal of Pharmacy and Technology*, 2329–2334. https://doi.org/10.52711/0974-360x.2025.00333
- Rautela, A., Rani, J., & Debnath, M. **(2019)**. Green synthesis of silver nanoparticles from *Tectona grandis* seeds extract: characterization and mechanism of antimicrobial action on different microorganisms. *Journal of Analytical Science & Technology*, *10(1)*. https://doi.org/10.1186/s40543-018-0163-z
- Ravi, L. **(2017)**. Bioactivity of *Phoenix dactylifera* seed and its phytochemical analysis. *International Journal of Green Pharmacy (IJGP)*, *11*(02). https://doi.org/10.22377/ijgp.v11i02.1037
- Ravimoorthy, R., & Pottail, L. **(2025)**. Plasma-assisted surface modification of cotton fabric dyed with silver nanocomposites for microbe-resistant textiles. *The Journal of The Textile Institute*, *116(12)*, 3123-3140.
- Raza, M. A., Kanwal, Z., Rauf, A., Sabri, A. N., Riaz, S., & Naseem, S. **(2016)**. Size- and Shape-Dependent Antibacterial Studies of Silver Nanoparticles Synthesized by Wet Chemical Routes. *Nanomaterials* (Basel, Switzerland), *6(4)*, 74. https://doi.org/10.3390/nano6040074
- Raziye Atakan, Inés Martínez-González, Díaz-García, P., & Marilés Bonet-Aracil. **(2023)**. Sustainable Dyeing and Functional Finishing of Cotton Fabric by *Rosa canina* Extracts. *Sustainability*, *16(1)*, 227–227. https://doi.org/10.3390/su16010227
- Reddy, S., Badarinath, A., & Prakash, G. **(2018)**. Formulation and Evaluation of Floating Tablets of Ciprofloxacin Hydrochloride. *Asian Journal of Pharmaceutics*, *12(2)*,106.
- Rençber, S., Şenyiğit, Y., & Özyazici, M. **(2019)**. Stability studies of compression coated ornidazole tablets for colon specific drug delivery. *J Res Pharm*,*23 (1)*, 34-43
- Rizwana, H., Alwhibi, M. S., Al-Judaie, R. A., Aldehaish, H. A., & Alsaggabi, N. S. **(2022)**. Sunlight-Mediated Green Synthesis of Silver Nanoparticles Using the Berries of Ribes rubrum (Red Currants): Characterisation and Evaluation of Their Antifungal and Antibacterial Activities. *Molecules*, *27(7)*, 2186. https://doi.org/10.3390/molecules27072186
- Roach-Higgins, M. E., & Eicher, J. B. **(1992)**. Dress and identity. *Clothing and textiles research journal*, *10*(4), 1-8. https://doi.org/10.1177/0887302X920100040
- Roldán, M.V., Pellegri, N., Sanctis, O. **(2013)**. Electrochemical method for Ag-PEG nanoparticles synthesis. *J Nanopart*, 524150.
- Roos, K., Wu, C., Damm, W., Reboul, M., *et al.…* Harder, E. D. **(2019)**. OPLS3e: Extending Force Field Coverage for Drug-Like Small Molecules. *Journal of Chemical Theory and Computation.* doi:10.1021/acs.jctc.8b01026
- Rosyidah, A., Purbani, D. C., Pratiwi, R. D., Muttaqien, S. E., Nantapong, N., et al…& Afani, H. **(2024)**. Eco-friendly synthesis of gold nanoparticles by marine microalgae *Synechococcus moorigangae*: Characterization, antimicrobial, and antioxidant properties. *Kuwait Journal of Science*, *51(2*), 100194. https://doi.org/10.1016/j.kjs.2024.100194
- Roy, P., & Shahiwala, A. **(2009)**. Statistical optimization of ranitidine HCl floating pulsatile delivery system for chronotherapy of nocturnal acid breakthrough. *European Journal of Pharmaceutical Sciences*, *37(3–4)*, 363–369. https://doi.org/10.1016/j.ejps.2009.03.006
- Ruan, L., Su, M., Qin, X., Ruan, Q., Lang, W., Wu, M., Chen, Y., & Lv, Q. **(2022)**. Progress in the application of sustained-release drug microspheres in tissue engineering. *Materials Today Bio*, *16*, 100394. https://doi.org/10.1016/j.mtbio.2022.100394
- Sadybekov, A. V., & Katritch, V. **(2023)**. Computational approaches streamlining drug discovery. *Nature*, *616*(7958), 673–685. https://doi.org/10.1038/s41586-023-05905-z
- Sahoo, J., Sarkhel, S., Mukherjee, N., & Jaiswal, A. **(2022)**. Nanomaterial-Based Antimicrobial Coating for Biomedical Implants: New Age Solution for Biofilm-Associated Infections. *ACS Omega*, *7*(50), 45962–45980. https://doi.org/10.1021/acsomega.2c06211
- Sai H. M., Raj Kumar, T., &. Siva S.K. L. **(2017)**. Docking studies of benzimidazole derivatives using Hex 8.0. *Int J Pharm Sci Res*, *8*,1677-1688. 10.13040/IJPSR.0975-8232
- Sakkal, M., Arafat, M., Yuvaraju, P., Beiram, R., & AbuRuz, S. **(2024)**. Preparation and Characterization of Theophylline Controlled Release Matrix System Incorporating Poloxamer 407, Stearyl Alcohol, and Hydroxypropyl Methylcellulose: A Novel Formulation and Development Study. *Polymers*, *16*(5), 643. https://doi.org/10.3390/polym16050643

References

- Sakr, H., Ammar, A., Zaki, H., Salama, M. A., & Ali, M. (**2023)**. Impact of ball milling on physicochemical, structural, and functional properties of Moringa oleifera L. leaf powders. *Journal of Food Measurement & Characterization*, *18(1)*, 320–330. https://doi.org/10.1007/s11694-023-02167-1
- Saleh, G. M., & Najim, S. S. **(2020)**. Antibacterial Activity of Silver Nanoparticles Synthesized from Plant Latex. *Iraqi Journal of Science*, *5*(2), 1579–1588. https://doi.org/10.24996/ijs.2020.61.7.5
- Salehi, B., Ata, A., Kumar, N. V. A., Sharopov, F., Ramírez-Alarcón, K., Ruiz-Ortega, A., Ayatollahi, S. A., *et al*…. Sharifi-Rad, J. **(2019)**. Antidiabetic potential of medicinal plants and their active components. *Biomolecules*, *9*(10), 551. https://doi.org/10.3390/biom9100551
- Sampath K.P, Debjit Bhowmik, Shweta Srivastava, Shravan Paswan & Dutta A.S. **(2012).** Sustained Release Drug Delivery System Potential, *The Pharma Innovation*, *1(2)*,48-60.
- Samy, M. N., Attia, E. Z., Shoman, M. E., Khalil, H. E., Sugimoto, S., Matsunami, K., & Fahim, J. R. **(2021)**. Phytochemical investigation of *Amphilophium paniculatum*; an underexplored Bignoniaceae species as a source of SARS-CoV-2 Mpro inhibitory metabolites: Isolation, identification, and molecular docking study. *South African Journal of Botany*, *141*, 421–430. doi:10.1016/j.sajb.2021.05.023
- Samy, M. N., Khalil, H. E., Sugimoto, S., Matsunami, K., Otsuka, H., & Kamel, M. S. **(2015)**. Amphipaniculosides A–D, triterpenoid glycosides, and amphipaniculoside E, an aliphatic alcohol glycoside from the leaves of *Amphilophium paniculatum*. Phytochemistry, *115*, 261–268. doi:10.1016/j.phytochem.2015.02.020
- Sander, T., Freyss, J., Von Korff, M., & Rufener, C. **(2015)**. Data Warrior: an Open-Source program for chemistry aware data visualization and analysis. *Journal of Chemical Information and Modeling*, *55*(2), 460–473. https://doi.org/10.1021/ci500588j
- Sankaran, A., Kamboj, A., Samant, L., & Jose, S. **(2021)**. Synthetic and Natural UV Protective Agents for Textile Finishing. *Innovative and Emerging Technologies for Textile Dyeing and Finishing*, 301–324. https://doi.org/10.1002/9781119710288.ch11
- Santhosh, P. B., Genova, J., & Chamati, H. **(2022)**. Green Synthesis of Gold Nanoparticles: An Eco-Friendly Approach. *Chemistry*, *4(2)*, 345–369. https://doi.org/10.3390/chemistry4020026
- Sarkar, J., Ray, S., Chattopadhyay, D., Laskar, A., & Acharya, K. **(2011)**. Mycogenesis of gold nanoparticles using a phytopathogen *Alternaria alternata*. *Bioprocess and Biosystems Engineering*, *35*(4), 637–643. https://doi.org/10.1007/s00449-011-0646-4
- Sarwar, N., Gao, P., Seshasai, S. R., Gobin, R., Kaptoge, S., Di Angelantonio, E., Ingelsson, E., *et al*… & Danesh, J. **(2010)**. *Diabetes mellitus*, fasting blood glucose concentration, and risk of vascular disease: a collaborative meta-analysis of 102 prospective studies. *Lancet (London, England)*, *375*(9733), 2215–2222. https://doi.org/10.1016/S0140-6736(10)60484-9
- Sasi, R., Sreejith, S. L., Ramesh, G., Sherin, D. R., Kaviyil, J. E., Paul, W., & Joseph, R. **(2021)**. Ionic liquid based antimicrobial coating on polymeric surface: A green chemistry approach. *Results in Surfaces and Interfaces*, *5*, 100026.
- Sasiporn A, Jaruwan T, Artit C, & Thananchai D. **(2025)**. Ecofriendly surface improvement of cotton fabric by a plasma-assisted method to enhance silver nanoparticle adhesion for antimicrobial properties. *Nanocomposites*, *11(1)*, 112–122. https://doi.org/10.1080/20550324.2025.2497210
- Sathe, N., Beech, P., Croft, L., Suphioglu, C., Kapat, A., & Athan, E. **(2023)**. *Pseudomonas aeruginosa*: Infections and novel approaches to treatment "Knowing the enemy" the threat of *Pseudomonas aeruginosa* and exploring novel approaches to treatment. *Infectious Medicine*, *2(3)*. https://doi.org/10.1016/j.imj.2023.05.003
- Savairam, V. D., Patil, N. A., Borate, S. R., Ghaisas, M. M., & Shete, R. V. **(2023)**. Allicin: A review of its important pharmacological activities. *Pharmacological Research*, *8*, 100283–100283. https://doi.org/10.1016/j.prmcm.2023.100283
- Schwarz, P. **(2025)**. IDF global clinical practice recommendations for managing type 2 diabetes – 2025. *Diabetes Research and Clinical Practice*, 112158. https://doi.org/10.1016/j.diabres.2025.112158
- Seetharaman, P. K., Ramalingam, P., Chandrika, M., Rajan, R., Chelliah, J., & Bo, L. **(2023)**. Antidiabetic potential of Gymnemic acid mediated gold nanoparticles (Gym@AuNPs) on Streptozotocin-induced diabetic rats-An implication on *in vivo* approach. *International Journal of Pharmaceutics*, *636*, 122843. https://doi.org/10.1016/j.ijpharm.2023.122843
- Sekar, V., Al-Ansari, M. M., Narenkumar, J., Al-Humaid, L., Arunkumar, P., & Santhanam, A. **(2022)**. Synthesis of gold nanoparticles (AuNPs) with improved anti-diabetic, antioxidant and anti-microbial activity from *Physalis minima*. *Journal of King Saud University - Science*, *34*(6), 102197. https://doi.org/10.1016/j.jksus.2022.102197
- Senjoti, F.G., Mahmood, S., Jaffri, J.M, & Mandal, U.K. **(2016)**. Design and *In vitro* Evaluation of Sustained Release Floating Tablets of Metformin HCl Based on Effervescence and Swelling. *Iran J Pharm Res.* Winter, *15(1)*, 53-70.
- Serdar, G. **(2024)**. Biosynthesis and Characterization of Gold Nanoparticles Using Microwave-Assisted Technology from Pomegranate (*Punica granatum* L.) Leaf Extract Produced by the Method of Supercritical Fluid Extraction (SFE). *Plasmonics*, *19(4)*, 2233–2243. https://doi.org/10.1007/s11468-024-02312-6
- Shaikh, J. R., & Patil, M. **(2020)**. Qualitative tests for preliminary phytochemical screening: An overview. *International Journal of Chemical Studies*, *8*(2), 603–608. https://doi.org/10.22271/chemi.2020.v8.i2i.8834
- Shaker, B., Ahmad, S., Lee, J., Jung, C., & Na, D. **(2021)**. *In silico* methods and tools for drug discovery. *Computers in Biology and Medicine*, *137*, 104851. https://doi.org/10.1016/j.compbiomed.2021.104851
- Shakya R, P.Thapa, , & R. N. Saha, **(2013)**. *In vitro* and *in vivo* evaluation of gastroretentive floating drug delivery system of ofloxacin. Asian Journal of Pharmaceutical Sciences, *8(3)*, 191–198. doi:10.1016/j.ajps.2013.07.025
- Shang, A., Cao, S., Xu, X., Gan, R., Tang, G., Corke, H., Mavumengwana, V., & Li, H. **(2019)**. Bioactive Compounds and Biological Functions of Garlic *(Allium sativum* L.). *Foods*, *8*(7), 246. https://doi.org/10.3390/foods8070246
- Sharma, K. R., & Kharel, R. **(2019)**. Antibacterial, Antidiabetic and Brine Shrimp Lethality Activities of Some Selected Medicinal Plants from Kavrepalanchok District of Nepal. *Journal of Institute of Science and Technology*, *24*(1), 57–62. https://doi.org/10.3126/jist.v24i1.24629
- Sheela, N.R., Muthu, S., & Sampath, K. **(2010)**. FTIR, FT Raman and UV-Visible Spectroscopic analysis on metformin hydrochloride, *Asian Journal of Chemistry*, *22(7)*, 5049-5056.
- Sher, A., Tsai, T. C., Sohail, A., Alouffi, A., Almutairi, M. M., *et al* … Rehman, G. **(2025)**. Green synthesis of silver nanoparticles and characterization using *Asparagus officinalis*: Elucidation of Anti-diabetic potentials through *In-Silico*, *In-Vitro*, and *In-Vivo* Analyses. *Green Chemistry Letters and Reviews*, *18(1)*. https://doi.org/10.1080/17518253.2025.2479589

References

- Shin, W.-K., Cho, J., Kannan, A. G., Lee, Y.S., & Kim, D.W. **(2016)**. Cross-linked Composite Gel Polymer Electrolyte using Mesoporous Methacrylate-Functionalized SiO_2 Nanoparticles for Lithium-Ion Polymer Batteries. *Scientific Reports*, *6*(1). https://doi.org/10.1038/srep26332
- Siddiqi, K. S., Husen, A., & Rao, R. A. K. **(2018)**. A review on biosynthesis of silver nanoparticles and their biocidal properties. *Journal of Nanobiotechnology*, *16*(1). https://doi.org/10.1186/s12951-018-0334-5
- Siddiqi, K. S., Husen, A., & Rao, R. a. K. **(2018)**. A review on biosynthesis of silver nanoparticles and their biocidal properties. *Journal of Nanobiotechnology*, *16*(1), 14. https://doi.org/10.1186/s12951-018-0334-5
- Siddiqi, K.S., & Husen, A. **(2016a)**. Fabrication of metal nanoparticles from fungi and metal salts: scope and application. *Nano Res Lett*, *11*, 98.
- Siddiqi, K.S., Husen, A.**(2016b)**. Fabrication of metal and metal oxide nanoparticles by algae and their toxic effects. *Nano Res Lett*, *11*, 363.
- Siepmann, J, & Peppas, N. **(2001)**. Modeling of drug release from delivery systems based on hydroxypropyl methylcellulose (HPMC). *Advanced Drug Delivery Reviews*, *48(2-3)*, 139–157. https://doi.org/10.1016/s0169-409x(01)00112-0
- Singh, B., & Bedi, Y. S. **(2016)**. Rediscovery, Taxonomic History and Extended Enumeration of *Haematocarpus validus* Bakh.f. ex Forman (Menispermaceae) to Indo-Myanmar Biodiversity Hotspot. *National Academy Science Letters*, *39*(5), 383–387. https://doi.org/10.1007/s40009-016-0483-8
- Singh, D.R., Singh, S., Shajeeda, B. V. **(2014)**. Estimation of Phytochemicals and determination of beta carotene in *Haematocarpus validus*, an underutilized fruit of Andaman and Nicobar Islands. Eur J Env Ecol, *1*:12–15.
- Slocik, J. M., Stone, M. O., & Naik, R. R. **(2005)**. Synthesis of gold nanoparticles using multifunctional peptides. *Small*, *1*(11), 1048–1052. https://doi.org/10.1002/smll.200500172
- Smina, C.S., Lalitha, P., Nagabhushana, H. & Sharma, S. C. **(2020)**. *Terminalia bellirica* dried fruit and seed extract offers alpha-amylase inhibitory potential in tackling diabetes. *Appl Nanosci 10*, 4325–4339. https://doi.org/10.1007/s13204-020-01549-x
- Smith, M. C., Crist, R. M., Clogston, J. D., & McNeil, S. E. **(2017)**. Zeta potential: a case study of cationic, anionic, and neutral liposomes. *Analytical and Bioanalytical Chemistry*, *409(24)*, 5779–5787. https://doi.org/10.1007/s00216-017-0527-z
- Soliman, M. K. Y., Salem, S. S., Abu-Elghait, M., & Azab, M. S. **(2022)**. Biosynthesis of silver and gold nanoparticles and their efficacy towards antibacterial, antibiofilm, cytotoxicity, and antioxidant activities. *Applied Biochemistry and Biotechnology*, *195*(2), 1158–1183. https://doi.org/10.1007/s12010-022-04199-7
- Soquetta, M. B., De Marsillac Terra, L., & Bastos, C. P. **(2018)**. Green technologies for the extraction of bioactive compounds in fruits and vegetables. *CyTA - Journal of Food*, *16*(1), 400–412. https://doi.org/10.1080/19476337.2017.1411978
- Sotiriou, G.A., Pratsinis, S.E. **(2010)**. Antibacterial activity of nanosilver ions and particles. Environ Sci Technol.*44*,5649–54.
- Sotiriou, G.A., Teleki, A., Camenzind, A., Krumeich, F., Meyer, A., Panke, S., Pratsinis, S.E. **(2011)**. Nanosilver on nanostructured silica: antibacterial activity and Ag surface area. *Chem Eng J.70*, 547–54.
- Srikar, S. K., Giri, D. D., Pal, D. B., Mishra, P. K., & Upadhyay, S. N. **(2016)**. Light Induced Green Synthesis of Silver Nanoparticles using Aqueous Extract of *Prunus amygdalus*. *Green and Sustainable Chemistry*, *06*(01), 26–33. https://doi.org/10.4236/gsc.2016.61003
- Stalin, N., Ramar, D., Esakkirajan, M., ArunPrasanna, V., Arumugam, A., & Gopinath, K. **(2025)**. Green synthesis-driven gold nanoparticles using *Lilium wallichianum* leaf extract for biomedical applications. *Inorganic Chemistry Communications*, *178*, 114507. https://doi.org/10.1016/j.inoche.2025.114507
- Su, Y., Liu, J., Tan, S., Liu, W., Wang, R., & Chen, C. **(2022)**. PLGA sustained-release microspheres loaded with an insoluble small-molecule drug: microfluidic-based preparation, optimization, characterization, and evaluation *in vitro* and *in vivo*. *Drug Delivery*, *29(1)*, 1437–1446. https://doi.org/10.1080/10717544.2022.2072413
- Sukhikh, S., Babich, O., Prosekov, A., *et al*…. & Ivanova, S. **(2023)**. Antidiabetic properties of plant secondary metabolites. *Metabolites*, *13*(4), 513. https://doi.org/10.3390/metabo13040513
- Suliasih, B. A., Budi, S., & Katas, H. **(2024)**. Synthesis and application of gold nanoparticles as antioxidants. *Pharmacia*, *71*, 1–19. https://doi.org/10.3897/pharmacia.71.e112322
- Suman, S., Loveleen, L., Bhandari, M., Syed, A., Bahkali, A. H., Manchanda, R., & Nimesh, S. **(2022)**. Antibacterial, antioxidant, and haemolytic potential of silver nanoparticles biosynthesized using roots extract of Cannabis sativa plant. *Artificial Cells Nanomedicine and Biotechnology*, *50(1)*, 343–351. https://doi.org/10.1080/21691401.2022.2149543
- Sundar, M., Rajagopal, G., Nivetha, A., Kumar, S. P., & Muthukumar, S. **(2024)**. Phyto-Mediated Green Synthesis of Silver Nanoparticles Using an Aqueous Leaf Extract of *Momordica cymbalaria*: Antioxidant, Cytotoxic, Antibacterial, and Photocatalytic Properties. *Separations*, *11*(2), 61. https://doi.org/10.3390/separations11020061
- Susanna, D., Balakrishnan, R. M., & Ettiyappan, J. P. **(2023)**. Ultrasonication-assisted green synthesis and characterization of gold nanoparticles from *Nothapodytes foetida*: An assessment of their antioxidant, antibacterial, anticancer and wound healing potential. *Journal of Drug Delivery Science and Technology*, *87*, 104740. https://doi.org/10.1016/j.jddst.2023.104740
- Szabados, M., Mészáros, R., Dobó, D. G., Kónya, Z., Kukovecz, Á., & Sipos, P. **(2024)**. Ball-Milling enhanced UV protection performance of CA2FE-Sulisobenzone layered double hydroxide organic clay. *Nanomaterials*, *14(17)*, 1436. https://doi.org/10.3390/nano14171436
- Tahir, I., Amina, S. J., Ahmad, N. M., & Janjua, H. A. **(2024)**. Antimicrobial Coating of Biologically Synthesized Silver Nanoparticles on Surgical Fabric and Surgical Blade to Prevent Nosocomial Infections. *Heliyon*, *10*(17), e35968–e35968. https://doi.org/10.1016/j.heliyon.2024.e35968
- Tesfaye, A., & Mengesha,W. **(2015)**. Traditional uses, phytochemistry and pharmacological properties of garlic (*Allium sativum*) and its biological active compounds, *Int. J. Sci. Res. Sci. Eng. Technol*, *1*, 142–148.
- Thakkar, K. N., Mhatre, S. S., & Parikh, R. Y. **(2010)**. Biological synthesis of metallic nanoparticles. *Nanomedicine: Nanotechnology, Biology and Medicine*, *6*(2), 257–262. https://doi.org/10.1016/j.nano.2009.07.002
- Thangaraju, N., Venkatalakshmi, R. P., Chinnasamy, A., & Kannaiyan, P. **(2012)**. Synthesis of silver nanoparticles and the antibacterial and anticancer activities of the crude extract of *Sargassum polycystum* C. agardh. *Nano Biomedicine and Engineering*, *4*(2). https://doi.org/10.5101/nbe.v3i1.p89-94
- Tien, D.C., Tseng, K.H., Liao, C.Y., Huang, J.C., Tsung, T.T. **(2008)**. Discovery of ionic silver in silver nanoparticle suspension fabricated by arc discharge method. *J Alloys Compd*. *463*, 408–11.

References

- Timoszyk, A., & Grochowalska, R. **(2022)**. Mechanism and Antibacterial Activity of Gold Nanoparticles (AuNPs) Functionalized with Natural Compounds from Plants. *Pharmaceutics*, *14*(12), 2599–2599. https://doi.org/10.3390/pharmaceutics14122599
- Tiso, T., Demling, P., Karmainski, T., Oraby, A., *et al…*& Regestein, L. **(2024)**. Foam control in biotechnological processes—challenges and opportunities. *Discover Chemical Engineering*, *4*(1). https://doi.org/10.1007/s43938-023-00039-0
- Tiwari, J. N., Tiwari, R. N., & Kim, K. S. **(2011)**. Zero-dimensional, one-dimensional, two-dimensional and three-dimensional nanostructured materials for advanced electrochemical energy devices. *Progress in Materials Science*, *57*(4), 724–803. https://doi.org/10.1016/j.pmatsci.2011.08.003
- Turner, J. V., Maddalena, D. J., & Agatonovic-Kustrin, S. **(2004)**. Bioavailability prediction based on molecular structure for a diverse series of drugs. *Pharmaceutical Research*, *21*(1), 68–82. https://doi.org/10.1023/b:pham.0000012154.09631.26
- Uboldi, M., Chiappa, A., Briatico-Vangosa,F., Melocchi, A., & Zema, L. **(2025)**. 3D printing of partially-coated floating systems for controlled release of drugs into the stomach. *International Journal of Pharmaceutics*, *675*, 125513. https://doi.org/10.1016/j.ijpharm.2025.125513
- Ullah, H., Wilfred, C. D., & Shaharun, M. S. **(2018)**. Ionic liquid-based extraction and separation trends of bioactive compounds from plant biomass. *Separation Science and Technology*, *54*(4), 559–579. https://doi.org/10.1080/01496395.2018.1505913
- Valls, C., Cusola, O., & Roncero, M. B. **(2022)**. Evaluating the potential of ozone in creating functional groups on cellulose. *Cellulose*, *29(12)*, 6595–6610. https://doi.org/10.1007/s10570-022-04694-4
- Vella, A., Bock, G., Giesler, P. D., Burton, D. B., *et al….* & Camilleri, M. **(2007)**. Effects of dipeptidyl peptidase-4 inhibition on gastrointestinal function, meal appearance, and glucose metabolism in Type 2 diabetes. *Diabetes*, *56*(5), 1475–1480. https://doi.org/10.2337/db07-0136
- Ventura, S. P. M., Silva, F. a. E., Quental, M. V., Mondal, D., Freire, M. G., & Coutinho, J. A. P. **(2017)**. Ionic-Liquid-Mediated Extraction and Separation Processes for Bioactive Compounds: Past, Present, and Future Trends. *Chemical Reviews*, *117*(10), 6984–7052. https://doi.org/10.1021/acs.chemrev.6b00550
- Verma, D. K., Hasan, S. H., & Banik, R. M. **(2016)**. Photo-catalyzed and phyto-mediated rapid green synthesis of silver nanoparticles using herbal extract of *Salvinia molesta* and its antimicrobial efficacy. *Journal of photochemistry and photobiology. B, Biology*, *155*, 51–59. https://doi.org/10.1016/j.jphotobiol.2015.12.008
- Vijayakumar, S. **(2019)**. Eco-friendly synthesis of gold nanoparticles using fruit extracts and *in vitro* anticancer studies. *Journal of Saudi Chemical Society*, *23(6)*, 753–761. https://doi.org/10.1016/j.jscs.2018.12.002
- Villanueva-Amador, G. S., Sánchez-Vargas, L. O., Gaitán-Cepeda, L. A., & Huerta-Reyes, M. **(2020)**. Antibacterial, Antifungal and Antiviral Properties of Malpighiaceae Family and Its Potential Impact for Oral Cavity Infectious Diseases. *Journal of Pharmaceutical Research International*, *32(16)*, 139-152.
- Virk, P. **(2018)**. Antidiabetic Activity of Green Gold-Silver Nanocomposite with *Trigonella foenum graecum* L. Seeds Extract on Streptozotocin-Induced Diabetic Rats. *Pakistan Journal of Zoology*, *50(1)*. https://doi.org/10.17582/journal.pjz/2018.2.711.718
- Wang, Y., Fofana, B., Roy, M., Ghose, K., Yao, X., Nixon, M., Nair, S., & Nyomba, G. B. **(2015)**. Flaxseed lignan secoisolariciresinol diglucoside improves insulin sensitivity through upregulation of GLUT4 expression in diet-induced obese mice. *Journal of Functional Foods*, *18*, 1–9. https://doi.org/10.1016/j.jff.2015.06.053
- Wang, Y., Xu, J., Shi, L., & Yang, H. **(2020)**. Recent advances in the antilung cancer activity of biosynthesized gold nanoparticles. *Journal of Cellular Physiology*, *235*(12), 8951–8957. https://doi.org/10.1002/jcp.29789
- Wang, Z., Bai, Z., Yan, J., Liu, T., Li, Y., Xu, J., Meng, X., & Bi, Y. **(2021)**. Anti-diabetic effects of linarin from *Chrysanthemi Indici* Flos via AMPK activation. *Chinese Herbal Medicines*, *14*(1), 97–103. https://doi.org/10.1016/j.chmed.2021.11.002
- Wei, X., Luo, M., Li, W., Yang, L., Liang, X., Xu, L., Kong, P., & Liu, H. **(2012)**. Synthesis of silver nanoparticles by solar irradiation of cell-free *Bacillus amyloliquefaciens* extracts and $AgNO_3$. 103(1), 273–278. https://doi.org/10.1016/j.biortech.2011.09.118
- Wickramaratne, M.N., Punchihewa, J.C. & Wickramaratne, D.B.M. **(2016)**. *In vitro* alpha amylase inhibitory activity of the leaf extracts of *Adenanthera pavonina*. *BMC Complement Altern Med*, 16(1**)**, 466, https://doi.org/10.1186/s12906-016-1452-y
- Wong, D., Nye, K., & Hollis, P. **(1991)**. Microbial flora on doctors' white coats. *BMJ: British Medical Journal*, *303*(6817), 1602.
- World Health Organisation (WHO) **(1993)**. Regional office for Western Pacific, research guidelines for evaluating the safety and efficacy of Herbal Medicines. Manila P.94, ISBN**:** 9290611103
- World Health Organization. **(2023)**. *Lung cancer*. https://www.who.int/news-room/fact-sheets/detail/lung-cancer
- World Health Organization. **(2024)**. *Global cancer burden growing, amidst mounting need for services*. https://www.who.int/news/item/01-02-2024-global-cancer-burden-growing--amidst-mounting-need-for-services
- Wouters, O. J., McKee, M., & Luyten, J. **(2020)**. Estimated research and development investment needed to bring a new medicine to market, 2009-2018. *JAMA*, *323*(9), 844. https://doi.org/10.1001/jama.2020.1166
- Wright, R., Zhang, Q., & Kirby, P. **(2011)**. Synthesis of silver nano particles and fabrication of aqueous Ag inks for inkjet printing. *Mater Chem Phys.129*,1075–80.
- Wu, J., & Ju, L. **(1998)**. Extracellular particles of polymeric material formed in n-hexadecane fermentation by *Pseudomonas aeruginosa*. *Journal of Biotechnology*, *59*(3), 193–202. https://doi.org/10.1016/s0168-1656(97)00150-8
- Wu, M.-Y., Kao, I-Fang., & Yen, S.-K. **(2025)**. Effects of Chitosan on Drug Load and Release for Cisplatin–Hydroxyapatite–Gelatin Composite Microspheres. *Polymers*, *17*(11), 1485–1485. https://doi.org/10.3390/polym17111485
- Xiao, J., Chen, G., & Li, N. **(2018)**. Ionic Liquid Solutions as a Green Tool for the Extraction and Isolation of Natural Products. *Molecules*, *23*(7), 1765. https://doi.org/10.3390/molecules23071765
- Xu, L., Wang, Y.-Y., Huang, J., Chen, C.-Y., Wang, Z.-X., & Xie, H. **(2020)**. Silver nanoparticles: Synthesis, medical applications and biosafety. *Theranostics*, *10(20)*, 8996–9031. https://doi.org/10.7150/thno.45413
- Xu, Z., Wang, X., Zhou, M., Ma, L., *et al….* & Jia, W. **(2007)**. The antidiabetic activity of total lignan from *Fructus Arctii* against alloxan- induced diabetes in mice and rats. *Phytotherapy Research*, *22(1)*, 97–101. https://doi.org/10.1002/ptr.2273
- Yahoum, M.M., Toumi, S., Tahraoui, H., Lefnaoui, S., *et al…* & Mouni, L. **(2023)**. Formulation and Evaluation of Xanthan Gum Microspheres for the Sustained Release of Metformin Hydrochloride. *Micromachines* (Basel). *14(3)*, 609. doi: 10.3390/mi14030609.
- Yamamura, H., Hagiwara, T., Hayashi, Y., *et al….* & Miyagawa, A. **(2021)**. Antibacterial Activity of Membrane-Permeabilizing Bactericidal Cyclodextrin Derivatives. *ACS Omega*, *6(47)*, 31831–31842. https://doi.org/10.1021/acsomega.1c04541
- Yattinahalli, S. S., Kapatkar, S. B., & Mathad, S. N. **(2016)**. Review of Nanoscience Materials and its applications. *Research Journal of Engineering and Technology*, *7*(3), 121. https://doi.org/10.5958/2321-581x.2016.00024.6

- Young, I.S., Woodside, J.V. **(2001)**. Antioxidants in health and disease. *J Clin Pathol*, *54*, 176–86.
- Yu M., Yuan W., Li D., Schwendeman A., & Schwendeman S.P. **(2019)**. Predicting drug release kinetics from nanocarriers inside dialysis bags, *J. Control. Release*,*315*,23–30. doi: 10.1016/j.jconrel.2019.09.016
- Zahid, R., Rizvi, S. N. B., Qureshi, Z., & Din, M. I. **(2022)**. Sustainable synthesis of monodispersed gold nanoparticles from *Phoenix dactylifera* L. and *in vivo* anti-diabetic activity on Alloxan induced mice. *Vibrational Spectroscopy*, *120*, 103371. https://doi.org/10.1016/j.vibspec.2022.103371
- Zhang, M., Sui, Z., Sun, L., Zhang, Q., Deng, L., He, L., Zhang, B., & Zu, B. **(2025)**. Improved mechanical, anti-UV, antibacterial and hydrophobic properties of hemp cellulose fabrics with nano-ZnO and perfluorooctanol-decorated waterborne polyurethane coating. *International Journal of Biological Macromolecules*, *306*, 141515. https://doi.org/10.1016/j.ijbiomac.2025.141515
- Zhang, Q., Li, N., Goebl, J., Lu, Z., & Yin, Y. **(2011)**. A systematic study of the synthesis of silver nanoplates: is citrate a "magic" reagent? *J Am Chem Soc*.*133*,18931–9.
- Zhang, W., Qiao, X., & Chen, J. **(2007)**. Synthesis of silver nanoparticles—effects of concerned parameters in water/oil microemulsion. *Mater Sci Eng B*. *42*,1–15.
- Zhang, X., Liu, Z., Shen, W., & Gurunathan, S. **(2016)**. Silver nanoparticles: synthesis, characterization, properties, applications, and therapeutic approaches. *International Journal of Molecular Sciences*, *17*(9), 1534. https://doi.org/10.3390/ijms17091534
- Zhao, Y., Gao, W., Li, S., Williams, G. R., Mahadi, A. H., & Ma, D. **(2019)**. Solar- versus Thermal-Driven Catalysis for Energy Conversion. *Joule*, *3(4)*, 920–937
- Zhou, J., Sui, H., Jia, Z., Yang, Z., He, L., & Li, X. **(2018a)**. Recovery and purification of ionic liquids from solutions: a review. *RSC Advances*, *8*(57), 32832–32864. https://doi.org/10.1039/c8ra06384b
- Zhou, Y., & Tang, R.C. **(2018)**. Facile and eco-friendly fabrication of AgNPs coated silk for antibacterial and antioxidant textiles using honeysuckle extract. *Journal of Photochemistry and Photobiology B: Biology*, *178*, 463–471. https://doi.org/10.1016/j.jphotobiol.2017.12.003
- Zhu, Q., Kakino, K., Nogami, C., Ohnuki, K., Shimizu, K. **(2016)**. An LC-MS/MS-SRM method for simultaneous quantification of four representative organosulfur compounds in garlic products. *Food Anal. Methods*, *9 (12)*, 3378–3384.

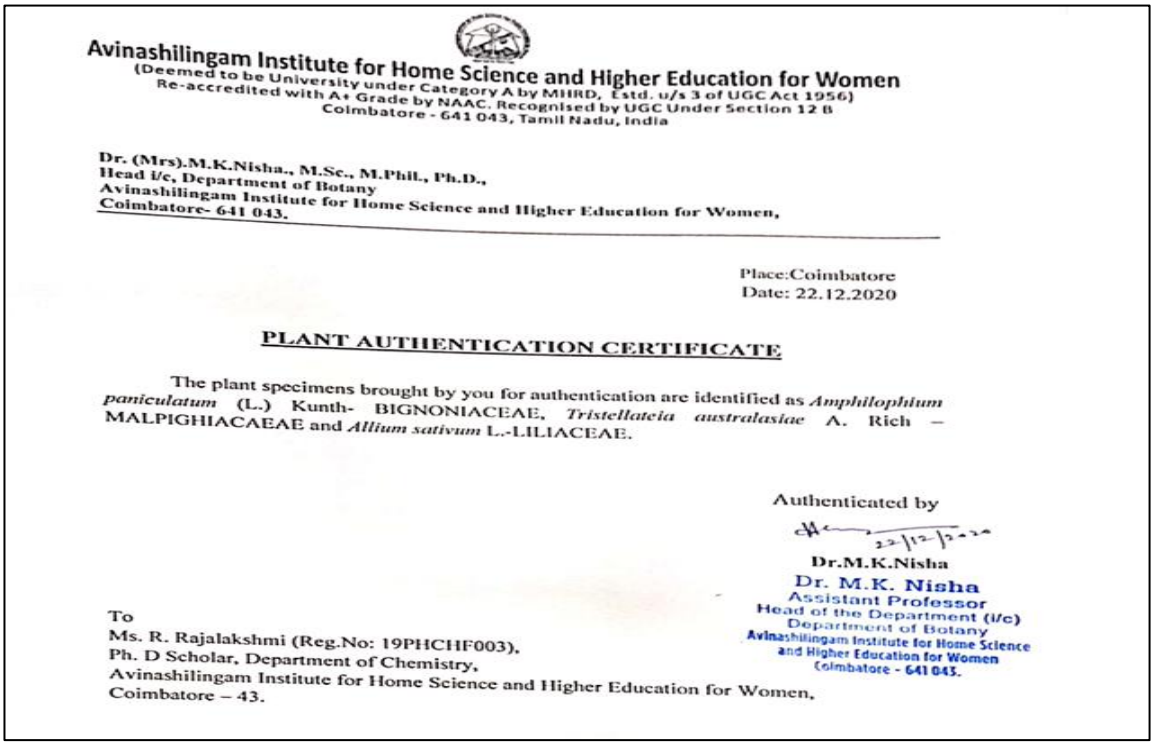
BIBLIOGRAPHY

- Aulton, M. E. **(2002)**. Pharmaceutics: the science of dosage form design., *Edition. 2nd*, p. 523.
- Barcelo, D. **(2017)**. Green Extraction Techniques: Principles, Advances and Applications, Volume 76 - 1st Edition | Elsevier Shop. Elsevier, ISBN: 9780444638694.
- Cullity B D, **(1956)**. Elements of X-ray diffraction (Reading, USA: Addison-Wesley Publishing Company Inc.)
- Farshid, S., Gholamali, F., & Masoud, M. **(2022)**. Principles of Biomaterials Encapsulation: Volume One. Woodhead Publishing.
- Finney, D. J. **(1971)**. Probit Analysis, 3rd ed., Cambridge UniversityPress, Cambridge.
- Gouda, R., & Baishya, H. **(2017)**. J. Dev, *Drugs*, vol. 6, p. 171,
- Harborne, J.B. **(2013)**. Phytochemical Methods: A Guide to Modern Techniques of Plant Analysis. Soft reprint of original 1st Edition 1973, Springer, ISBN: 9789401089562
- Levan **(1938)**. The effect of colchicines on root mitoses in Allium, Hereditas 24 (1938) 471–486.
- Müller, R.H **(1996)**. Zeta potential and Particle Charge in laboratory usage, Wissenschaftliche Verlagsgesellschaft, Stuttgart, Germany.
- Pavia, D. L., Lampman, G. M., Kriz, G. S., & Vyvyan, J. R. **(2014)**. *Introduction to spectroscopy* (5th ed.). Cengage Learning.
- Smith, B. C. **(2011)**. *Fundamentals of Fourier Transform Infrared Spectroscopy* (2nd ed.). CRC Press
- Smith, K. **(1997)**. Colour-order systems, colour spaces, colour difference and colour scales. *Colour physics for industry*, 121-208.
- Tekade, R. K. **(2019)**. Basic fundamentals of drug delivery. Academic Press, an imprint of Elsevier. ISBN: 978-0-12-814487-9

THESIS & DISSERTATION

- MO, A. M. **(1996)**. A chemical study on the constituents of *Stephania rotunda* and *Tristellateia australasiae*. Scholarbank.nus.edu.sg.
- Sangma, F.A. **(2017)**. Standardisation of fermented beverage from beet root and blood fruit M.Sc. Thesis submitted to Department of Horticulture. North Eastern Hill University, Meghalaya

Appendix i



Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University under Category A by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with A+ Grade by NAAC. Recognised by UGC Under Section 12 B
Coimbatore - 641 043, Tamil Nadu, India

Dr. (Mrs).M.K.Nisha., M.Sc., M.Phil., Ph.D.,
Head i/c, Department of Botany
Avinashilingam Institute for Home Science and Higher Education for Women,
Coimbatore- 641 043.

Place:Coimbatore
Date: 22.12.2020

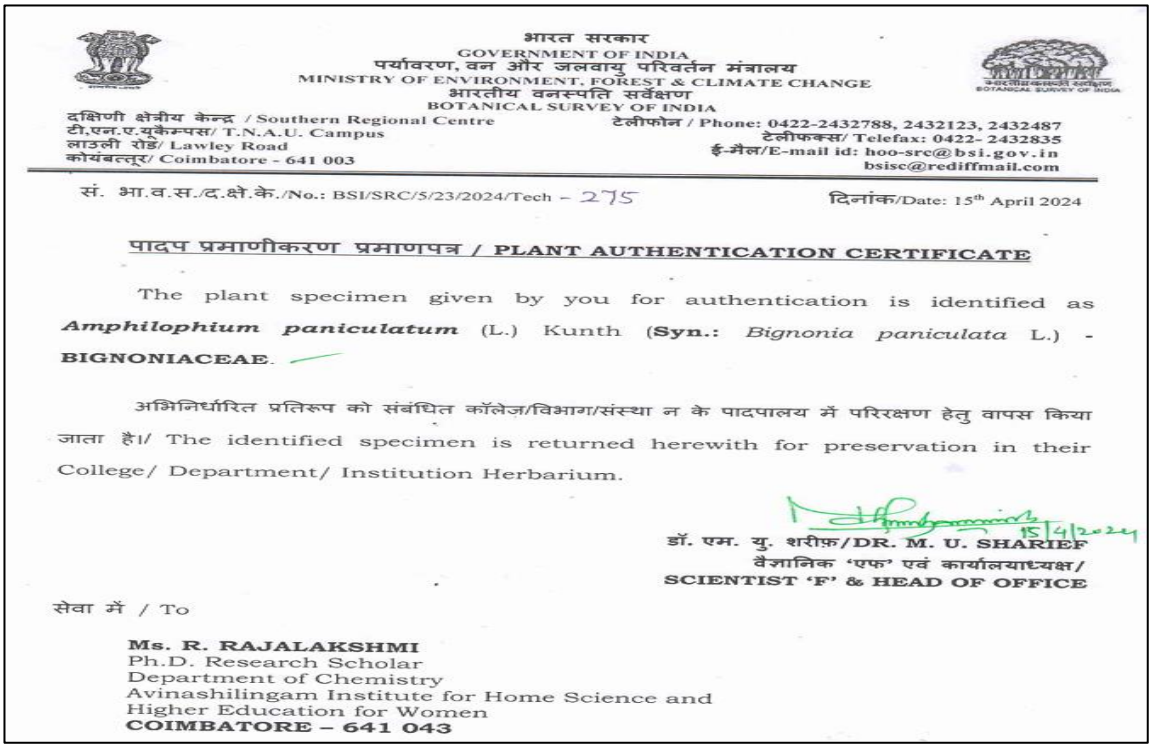
PLANT AUTHENTICATION CERTIFICATE

The plant specimens brought by you for authentication are identified as *Amphilophium paniculatum* (L.) Kunth- BIGNONIACEAE, *Tristellateia australasiae* A. Rich – MALPIGHIACAEAE and *Allium sativum* L.-LILIACEAE.

Authenticated by
22/12/2020
Dr.M.K.Nisha
Dr. M.K. Nisha
Assistant Professor
Head of the Department (i/c)
Department of Botany
Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore - 641 043.

To
Ms. R. Rajalakshmi (Reg.No: 19PHCHF003),
Ph. D Scholar, Department of Chemistry,
Avinashilingam Institute for Home Science and Higher Education for Women,
Coimbatore – 43.

Appendix ii



भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
भारतीय वनस्पति सर्वेक्षण
BOTANICAL SURVEY OF INDIA

दक्षिणी क्षेत्रीय केन्द्र / Southern Regional Centre
टी.एन.ए.यू.कैम्पस/ T.N.A.U. Campus
लाउली रोड/ Lawley Road
कोयंबत्तूर/ Coimbatore - 641 003

टेलीफोन / Phone: 0422-2432788, 2432123, 2432487
टेलीफक्स/ Telefax: 0422- 2432835
ई-मेल/E-mail id: hoo-src@bsi.gov.in
bsisc@rediffmail.com

सं. भा.व.स./द.क्षे.के./No.: BSI/SRC/5/23/2024/Tech – 275 दिनांक/Date: 15th April 2024

पादप प्रमाणीकरण प्रमाणपत्र / PLANT AUTHENTICATION CERTIFICATE

The plant specimen given by you for authentication is identified as ***Amphilophium paniculatum*** (L.) Kunth (**Syn.:** *Bignonia paniculata* L.) - **BIGNONIACEAE**.

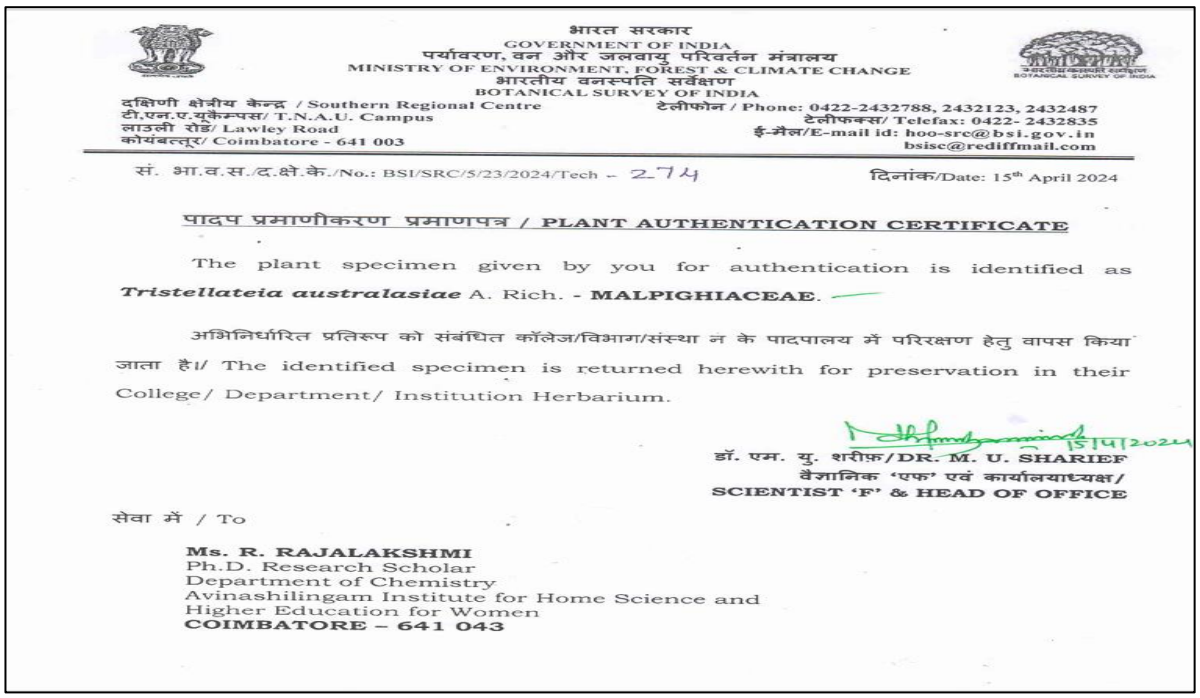
अभिनिर्धारित प्रतिरूप को संबंधित कॉलेज/विभाग/संस्था न के पादपालय में परिरक्षण हेतु वापस किया जाता है।/ The identified specimen is returned herewith for preservation in their College/ Department/ Institution Herbarium.

15/4/2024
डॉ. एम. यु. शरीफ़/DR. M. U. SHARIEF
वैज्ञानिक 'एफ' एवं कार्यालयाध्यक्ष/
SCIENTIST 'F' & HEAD OF OFFICE

सेवा में / To

Ms. R. RAJALAKSHMI
Ph.D. Research Scholar
Department of Chemistry
Avinashilingam Institute for Home Science and
Higher Education for Women
COIMBATORE – 641 043

Appendix ii a



भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
भारतीय वनस्पति सर्वेक्षण
BOTANICAL SURVEY OF INDIA

दक्षिणी क्षेत्रीय केन्द्र / Southern Regional Centre
टी.एन.ए.यू.कैम्पस/ T.N.A.U. Campus
लाउली रोड/ Lawley Road
कोयंबत्तूर/ Coimbatore - 641 003

टेलीफोन / Phone: 0422-2432788, 2432123, 2432487
टेलीफक्स/ Telefax: 0422- 2432835
ई-मेल/E-mail id: hoo-src@bsi.gov.in
bsisc@rediffmail.com

सं. भा.व.स./द.क्षे.के./No.: BSI/SRC/5/23/2024/Tech – 274 दिनांक/Date: 15th April 2024

पादप प्रमाणीकरण प्रमाणपत्र / PLANT AUTHENTICATION CERTIFICATE

The plant specimen given by you for authentication is identified as ***Tristellateia australasiae*** A. Rich. - **MALPIGHIACEAE**.

अभिनिर्धारित प्रतिरूप को संबंधित कॉलेज/विभाग/संस्था न के पादपालय में परिरक्षण हेतु वापस किया जाता है।/ The identified specimen is returned herewith for preservation in their College/ Department/ Institution Herbarium.

15/04/2024
डॉ. एम. यु. शरीफ़/DR. M. U. SHARIEF
वैज्ञानिक 'एफ' एवं कार्यालयाध्यक्ष/
SCIENTIST 'F' & HEAD OF OFFICE

सेवा में / To

Ms. R. RAJALAKSHMI
Ph.D. Research Scholar
Department of Chemistry
Avinashilingam Institute for Home Science and
Higher Education for Women
COIMBATORE – 641 043

Appendix iii

भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
भारतीय वनस्पति सर्वेक्षण
BOTANICAL SURVEY OF INDIA

दक्षिणी क्षेत्रीय केन्द्र / Southern Regional Centre
टी.एन.ए.यू.कैम्पस/ T.N.A.U. Campus
लाउली रोड/ Lawley Road
कोयंबत्तूर/ Coimbatore - 641 003

टेलीफोन / Phone: 0422-2432788, 2432123, 2432487
टेलीफक्स/ Telefax: 0422- 2432835
ई-मेल/E-mail id: hoo-src@bsi.gov.in
bsisc@rediffmail.com

सं. भा.व.स./द.क्षे.के./No.: BSI/SRC/5/23/2024-25/Tech – 327 दिनांक/Date: 27th May 2024

पादप प्रमाणीकरण प्रमाणपत्र / PLANT AUTHENTICATION CERTIFICATE

The plant specimen given by you for authentication is identified as ***Haematocarpus validus*** (Miers) Bakh.f. ex Forman - **MENISPERMACEAE**.

अभिनिर्धारित प्रतिरूप को संबंधित कॉलेज/विभाग/संस्थान के पादपालय में परिरक्षण हेतु वापस किया जाता है।/ The identified specimen is returned herewith for preservation in their College/ Department/ Institution Herbarium.

27/5/2024
डॉ. एम. यु. शरीफ़/Dr. M. U. SHARIEF
वैज्ञानिक 'एफ' एवं कार्यालयाध्यक्ष/
SCIENTIST 'F' & HEAD OF OFFICE

सेवा में / To

Ms. R. RAJALAKSHMI
Ph.D. Research Scholar
Department of Chemistry
Avinashilingam Institute for Home Science &
Higher Education for Women
COIMBATORE – 641 043

Appendix iv

Procedure for MTT assay

Culturing and maintenance of cell lines

The cell lines namely A^{549} (Lung cancer) was purchased from National Centre for Cell Science (NCCS), Pune, India. The cells were maintained in a CO_2 incubator with 5% CO_2 and 95% humidity atmosphere supplemented with Ham's F12 medium, 10% FBS, penicillin and streptomycin at 1X final concentration from a 100X stock. Once the cells attained confluent growth, the cells were trypsinized using Trypsin-EDTA and the cells (10^5) was seeded into sterile 96-well plates for carrying out for assays. The cytotoxicity assays were carried out in 96-well plates. In each well of the 96-well plates cells were seeded, the cells were seeded followed by the incubation in a CO_2 incubator (Innova CO-170, United States) with 5 % CO_2 and 95% humidity atmosphere.

Principle

The 2-(4, 4-dimethyl-2-tetrazoyl)-2, 5-diphenyl-2, 4-tetrazolium salt (MTT) is converted into its formazon derivative by live cells and the amount of formazon formed is a measure of number of viable cells. The formazon formed is then solubilized with suitable solvent and the cell viability is measured in a microtitre plate reader.

Reagents

1. PBS (phosphate buffered saline) -pH 7.4
2. MTT – 3 mg/mL in PBS
3. Isopropanol in 0.04 N HCl (acid-propanol)

Procedure

About 100 µL of treated cells were incubated with 50 µL of MTT at 37 ˚ C for 3 h. After incubation, 200 of PBS was added to all the samples and aspirated carefully to remove excess MTT. 200 µL of acid-propanol was added and left overnight in the dark for solubilization. The absorbance was read at 650 nm in a microtitre plate reader (Bio RAD U.S.A.). The optical density of the control cells was fixed to be 100% viable and the percent viability of the cells in the other treatment groups were calculated.

Appendix v

Procedure for Antidiabetic α-amylase Inhibitory Assay

Preparation of Starch and Phosphate Buffer Solutions

Starch solution (1%) was prepared by dissolving 1g starch to the beaker containing 100 mL hot water. A phosphate buffer (0.02M) solution of pH 6.9 was prepared by adding 20 mL phosphate buffer (0.1M) and made up to 100 mL H_2O.

Preparation of DNS Colouring Agent

Sodium potassium tartarate (12 g) was added slowly to the beaker containing 8 mL of sodium hydroxide solution (2M) and continuously stirred till it dissolves, labelled as solution I. Simultaneously, 96 mM - 3,5 dinitro salicylic acid (DNS) was prepared in 20 mL H_2O and kept in water bath for 5 min, labelled as solution II. DNS colouring reagent was prepared by adding solution I to the beaker containing solution II under stirring condition and become a dark orange colour, labelled as solution III. This solution III was taken and further diluted with H_2O which becomes yellow colour and labelled as a DNS colouring reagent.

Preparation of Plant Amylase Solution

Plant amylase solution was prepared by dissolving 0.0125 g *Aspergillus oryzae* enzyme in 50 mL phosphate buffer (0.02 M) and kept at ice-cooled condition (3°C).

Preparation of Standard and Sample Solution

For samples, the stock solution (1 mg/mL H_2O) containing the plant extract of APE, TAE, BFE, and DSE and biosynthesised GNPs and SNPs such as APEG, TAEG, BFEG, DSEG, APES, TAES, BFES and DSES were prepared. From the above solution, different concentrations such as 100µg/mL, 200 µg/mL, 300 µg/mL, 500 µg/mL and 750 µg/mL was tested for α-amylase inhibition assay. Similarly, for standard (Acarbose -A and Metformin-M), the stock solution (1mg/mL H_2O) and five different concentrations were prepared such as 100µg/mL, 200 µg/mL, 300 µg/mL, 500 µg/mL and 750 µg/mL were tested for α-amylase inhibition assay.

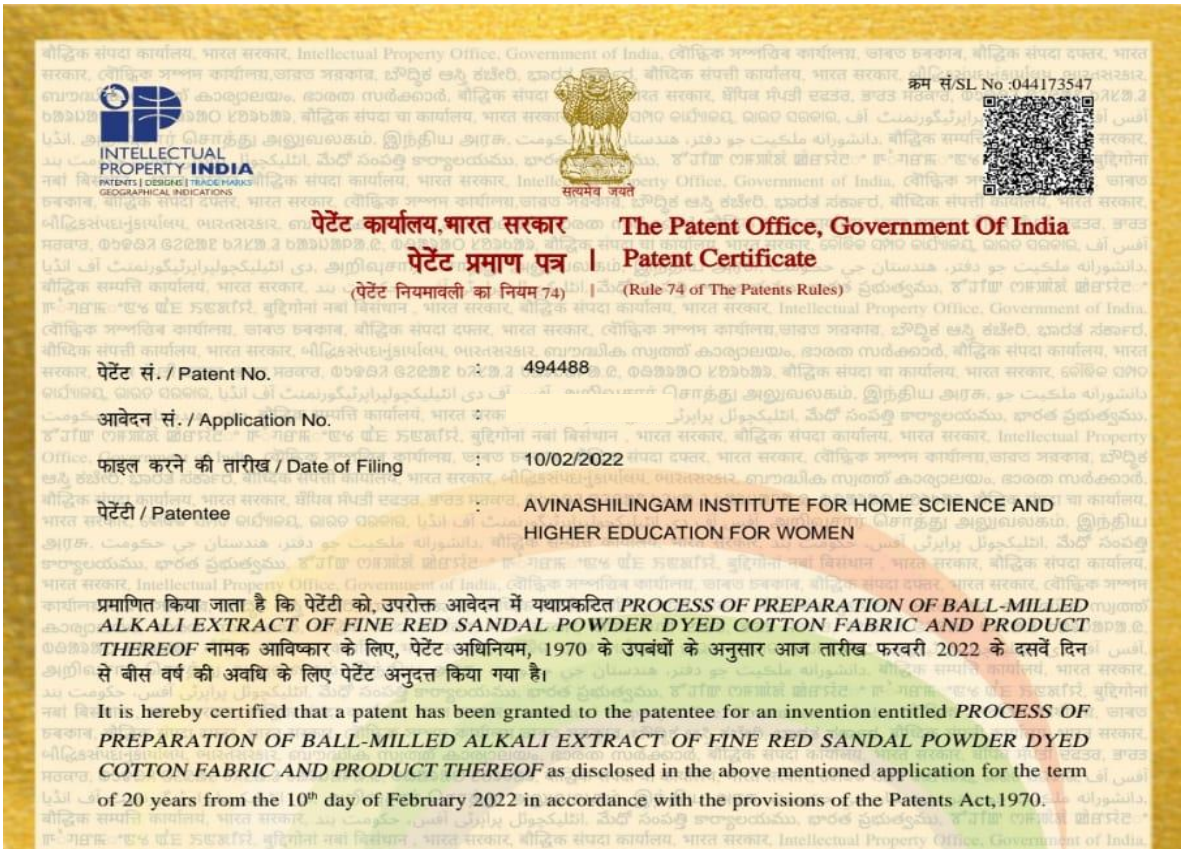
Test Procedure for α-amylase Inhibition Activity

Plant extract (100 µL) at five different concentrations were mixed with phosphate buffer (100 µL) and shaken well for 1 min. To this solution, 100 µL plant amylase enzyme was added, mixed thoroughly, and incubated for 20 min under ice-cooled conditions. Starch (100 µL) was then added to each test tube and incubated for an additional 5 min. The reaction was terminated by adding 100 µL DNS colouring reagent, and the mixture was

boiled in a water bath for 15 min at 85 to 90˚ C. After cooling to RT, the solution was diluted with 1 mL of distilled H_2O and the absorbance was measured at 540 nm using UV nano bio spec spectrophotometer.

A similar procedure was followed for biosynthesised GNPs, SNPs and standard (acarbose and metformin) inhibitors. For both standards, plots of five different concentrations on the x-axis against α-amylase % inhibition on the y-axis were created, and a regression plot was performed. For the blank, a reaction containing phosphate buffer (200 µL) and plant amylase enzyme (100 µL) was shaken and incubated for 20 min under ice-cooled conditions. Starch (100 µL) was added and incubated for 5 min. DNS (100 µL) was then added and mixture was boiled in a water bath for 15 min at 85 to 90 ˚ C. After cooling to ambient temperature, the samples were diluted with 1 mL of distilled H_2O and absorbance was measured at 540 nm using the UV bio spec nano spectrophotometer.

Appendix vi



INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

सत्यमेव जयते

क्रम सं/SL No :044173547

पेटेंट कार्यालय,भारत सरकार
पेटेंट प्रमाण पत्र |
(पेटेंट नियमावली का नियम 74)

The Patent Office, Government Of India
Patent Certificate
(Rule 74 of The Patents Rules)

पेटेंट सं. / Patent No.	:	494488
आवेदन सं. / Application No.	:	
फाइल करने की तारीख / Date of Filing	:	10/02/2022
पेटेंटी / Patentee	:	AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION FOR WOMEN

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित *PROCESS OF PREPARATION OF BALL-MILLED ALKALI EXTRACT OF FINE RED SANDAL POWDER DYED COTTON FABRIC AND PRODUCT THEREOF* नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख फरवरी 2022 के दसवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled *PROCESS OF PREPARATION OF BALL-MILLED ALKALI EXTRACT OF FINE RED SANDAL POWDER DYED COTTON FABRIC AND PRODUCT THEREOF* as disclosed in the above mentioned application for the term of 20 years from the 10th day of February 2022 in accordance with the provisions of the Patents Act,1970.

PUBLICATIONS

1. **Rajalakshmi R**, Lalitha Pottail, & Muddukrishnaiah Kotakonda. **(2025)**, Solar-Assisted Synthesis of Silver Nanoparticles from *Amphilophium paniculatum* (L.) Kunth: Unlocking Multi-Therapeutic Potential for Lung Cancer, Diabetes and Drug Resistant Infections through *In vitro* Studies and *In silico* Antidiabetic Evaluations. Microbial Pathogenesis, 205(8), 107647–107647. https://doi.org/10.1016/j.micpath.2025.107647 **(SCIE & SCOPUS) IF :3.3**

2. **Rajalakshmi R**, Lalitha Pottail, & Sharma, S. C. **(2025)**, Ionic liquids-based extraction of natural products from plants −An overview. *Journal of Molecular Liquids*, 425(5), 127226–127226. https://doi.org/10.1016/j.molliq.2025.127226 **(SCIE & SCOPUS) IF :5.3**

3. **Rajalakshmi R**, & Pottail, L. **(2025)**, Plasma-assisted surface modification of cotton fabric dyed with silver nanocomposites for microbe-resistant textiles. *The Journal of the Textile Institute*,116 (12), 1–18. https://doi.org/10.1080/00405000.2025.2473629 **(SCIE & SCOPUS) IF :1.8**

4. **Rajalakshmi, R.**, Lalitha, P., *et al.*, **(2021)**, *In silico* studies: Physicochemical properties, drug score, toxicity predictions and molecular docking of organosulphur compounds against Diabetes mellitus. *Journal of Molecular Recognition*, *34*(11). https://doi.org/10.1002/jmr.2925 **(SCIE & SCOPUS) IF: 2.3**

5. **R. Rajalakshmi,** P. Lalitha, Parveen, *et al.*, **(2023)**, *In silico* and *in vitro* antimicrobial activity of date-palm aided silver nanoparticles conjugated with drug ampicillin for drug release study. *Materials Today Sustainability*, *23*, 100471–100471. https://doi.org/10.1016/j.mtsust.2023.100471 **(SCIE & SCOPUS) IF:7.1**

6. **Rajalakshmi R**, Lalitha Pottail, *et al.*, **(2021)**, Biogenic synthesis of gold nanoparticles using *Haematocarpus validus* fruit ethanol extract and their antioxidant activity. J*ournal of Advanced Applied Scientific Research*, *3*(4), 87–93. https://doi.org/10.46947/joaasr342021134 **(ESCI)**

7. Chithambharan, A., Pottail, L., Sharma, S.C., Rekha Manjunath Mirle, **R. Rajalakshmi** & Aruna Ponnusamy **(2023)**. Conventional and Scientific uses of Rice-washed water: A Systematic Review. *J Food Sci Technol*. https://doi.org/10.1007/s13197-023-05722-2 (**SCIE & SCOPUS; IF: 3.11)**

8. C Akhila P Lalitha, P Jayalakshmi, **R Rajalakshmi**, P. Aruna **(2021)**, Phyto-labelled Gold Nanoparticles Using Garcinia cambogia Capsules for Selective Detection of Cyanide Ions, The Indian journal of nutrition and dietetics, 10.21048/ijnd.2021.58.s1.27539 **(UGC CARE, INDIA)**

9. Chithambharan A, Pottail L, Mirle RM, **Rajalakshmi R**, Ponnusamy A **(2021)**, Bioinspired Gold Nanoparticle Synthesis Using *Terminalia bellerica* Fruit Parts and Exploring Their Anti-bacterial Potency *In Vitro.* Indian J Microbiol. Sep;61(3):298-305. doi: 10.1007/s12088-021-00937-3. Epub 2021 Apr 11. PMID: 34294996; PMCID: PMC8263827 **(SCIE & SCOPUS, IF:2.4)**

10. Ponnusamy, A., Pottail, L., S C, S. Reddy, S Akhila C; and **Rajalakshmi R (2024)**, Nanospray dryer assisted - Biogenic Synthesis of Graphene/Boron-Graphene Nanocomposites and their antibacterial efficacy. *Biomass Conv. Bioref.* (2024). https://doi.org/10.1007/s13399-024-05783-z **(SCIE & SCOPUS, IF:3.5)**