SPECIMEN FORMAT FOR THESIS OF MONTH

Faculty	:	Science
Department	:	Biochemistry, Biotechnology & Bioinformatics
Branch/ Area:	:	Biotechnology
Sub Subject Heading:	:	Biotechnology
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Title of the thesis	:	A Study on the Therapeutic Potential of Silver and Gold Nanobioconjugates from *Clitoria ternatea* Leaves
(i) In Roman Script		-
(ii) In roman Script		-
Nomenclature of Degree:	:	Ph. D.
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Designation of Supervisor	:	Professor in Biochemistry
Centre/Department/School in which Research was conducted	:	Department of Biochemistry, Biotechnology & Bioinformatics
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Abstract within 300 words:

Objectives: The green synthesis of silver and gold nanobioconjugates from the leaf extracts of *Clitoria ternatea* bearing blue and white flowers and their bioactivities.

Methodology: The leaves, seeds and roots of the two varieties of *Clitoria ternatea* were examined for their antioxidant, antibacterial activities after extraction with solvents of varying polarity. The methanolic leaf extracts of both varieties were selected for further analysis. Nanobioconjugates were prepared using silver and gold using sunlight, water bath heating and microwave heating. As exposure to bright sunlight for 20 minutes gave the maximum yield,only this method was used further. The synthesized nanobioconjugates were then characterized. The TEM and SEM images revealed that the size of the synthesized nanobioconjugates were well within the range of nanoparticles with spherical shape. EDX, XRD, FTIR, zeta potential and PDI showed successful and stable conjugation of silver and gold with extract components, which were well dispersed. The antibacterial activity was assessed against clinical isolates. *In vitro* anti-inflammatory activity was also evaluated using HRBC membrane stabilization, heat induced hemolysis and proteinase inhibition activities. The results showed that the gold nanobioconjugates exhibited better bioactivity than their silver counterpart. Biocompatibility of the nanobioconjugates was determined in human blood cells using hemolysis, blood clotting time, morphological changes of RBC and blood lymphocytes. Drug release kinetics revealed that, all the four nanobioconjugates released their drug cargo steadily. All the experimental results proved that the synthesized nanobioconjugates were safe. The*in vivo* anti-inflammatory activity was tested using Swiss albino mice against both acute and chronic inflammations. The administration of the silver and gold nanobioconjugates protected the mice against the both acute and chronic inflammation than their unconjugated leaf extracts.

Finding

The synthesis of nanobioconjugates improved the bioactivity of the plant extracts. Gold nanobioconjugates were found to be more effective than silver nanobioconjugates and the white variety was better than the blue variety.

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