

III METHODOLOGY

The Methodology of the study entitled, “**Cultivation and Nutritional Profiling of Selected Varieties of Microgreens and their Acceptability in Incorporated Recipes**” was carried out in the following phases

3.1. Phase I: Growth and Cultivation of Microgreens

- 3.1.1 Selection of Samples, Minor Tools and Other Accessories
- 3.1.2 Pilot Study to Select the Best Media, Lighting and Watering Method for Cultivation of Microgreens
 - 3.1.2.1. Determination of Best Growing Medium
 - 3.1.2.2. Determination of Best Lighting Condition
 - 3.1.2.3. Determination of Best Watering Method
 - 3.1.2.4. Analysis of the Growth Medium
 - 3.1.2.5. Cultivation Process of Microgreens
- 3.1.3. Cultivation of Selected microgreens (N=6) in the Chosen Media, Lighting Condition and Watering Method.
- 3.1.4 Analyzing the Growth of Cultivated Micro-greens
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3.2. Phase II: Analysis of Microgreens and Formulation of Microgreen Based Recipes

- 3.2.1 Analysis of Micronutrients in Cultivated Microgreens and their Comparison with the Mature Counterparts (Regular Greens).
- 3.2.2 Determination of Phytochemical Content in Selected Micro-greens
- 3.2.3 Analysis of Heavy Metals in Selected Microgreens
- 3.2.4 Determination of Shelf Life of Selected Microgreens
- 3.2.5 Formulation of Recipes with Cultivated Microgreens
- 3.2.6 Determination of Nutritive Value and Sensory Evaluation of the Developed Microgreen Based Recipes.
 - 3.2.6.1. Determination of Nutritive Value of Microgreen Based Recipes
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3.3. Phase III: Determination of Knowledge, Attitude and Practices (KAP) on Microgreens and Creating Awareness on Cultivation and Importance of Microgreens among Selected Subjects (Self Help Groups - Kudumbashree)

3.3.1 Assessment of Pre-Knowledge, Attitude and Practices (KAP) on Microgreens among Subjects (Self Help Groups - Kudumbashree)

3.3.1.1. Selection of Subjects

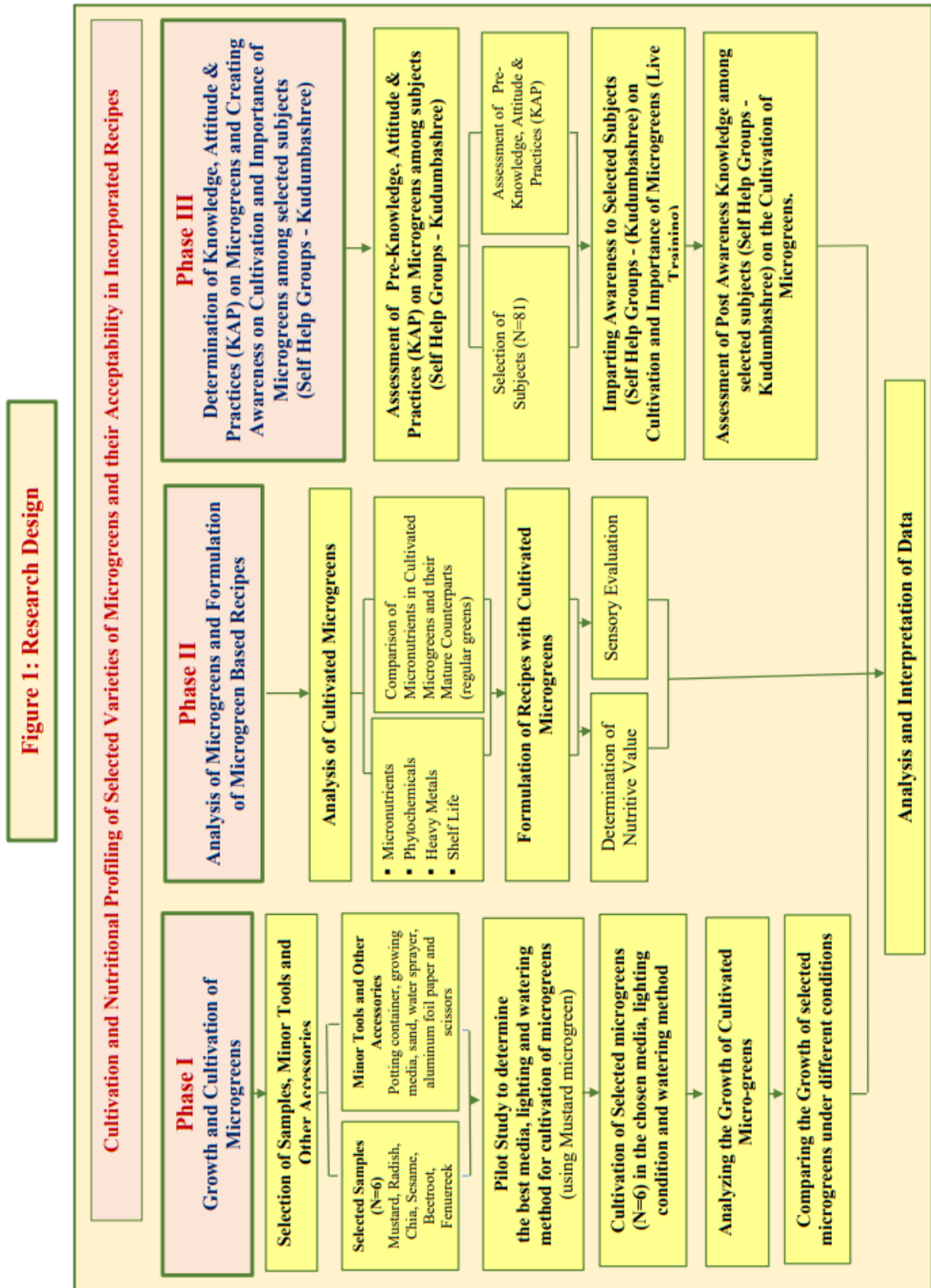
3.3.1.2. Assessment of Pre-Knowledge, Attitude and Practices (KAP) on Microgreens

3.3.2 Imparting Awareness to Selected Subjects (Self Help Groups - Kudumbashree) on Cultivation and Importance of Microgreens

3.3.3 Assessment of Post Awareness Knowledge among Selected Subjects (Self Help Groups - Kudumbashree) on the Cultivation of Microgreens

3.3.4. Data Interpretation and Statistical Analysis

RSEARCH DESIGN



3.1. Phase I: Growth and Cultivation of Microgreens

3.1.1 Selection of Samples, Minor Tools and Other Accessories

The microgreens were selected because they were not consumed by general public. Further, these can be easily grown in a small space and within a short span of time. It contains significantly higher amount of nutrients when compared to normal greens. On top of the above, as the microgreens are grown in a controlled condition with selected medium and light etc., it avoids the presence of heavy metals like lead, arsenic etc. In addition, these microgreens have a peculiar flavor and texture which is completely different from the normal greens making it more acceptable for consumption. Also, these microgreens are very tender and delicate making them a very suitable ingredient to be added in any type of recipes especially salads.

Hence, the selected samples for the study were six types of microgreens seeds Mustard Microgreen (*Brassica juncea*) from Brassica family, Chia Microgreen (*Salvia hispanica*) from Mint family, Fenugreek Microgreen (*Trigonella foenum-graecum*) from the Fabaceae family, Beetroot Microgreen (*Beta vulgaris*) from the Amaranthaceous family, Sesame Microgreen (*Sesamum indicum*) from Pedaliaceae family and Radish Microgreen (*Raphanus sativus*) from Brassicaceae family.



Plate I: Microgreens Selected for the Study

The minor tools and other accessories required for growing microgreens are given in the Table II.

Table II
Minor Tools, Media and Accessories used for the Study

Tools	Numbers /size
Potting Container	Mud pots(Dia. 34 x Ht. 18 centimeters)
Growing Medium	Coco peat, Black Soil, Vermicompost with sand in 1:1,2:1 and 3:1 ratio respectively.
Microgreen Seeds	50 seeds per packet
Aluminum Foil	2 Rolls
Water Sprayer	1 or as needed
Scissors	1 or as needed

- **Potting Container**

Mud pot was selected for the cultivation of microgreens. Potting containers were chosen to as this was an eco-friendly option and also the survival rate of greens was higher in mudpots (Saifullah, *et al.*, 2010). The mud-pot selected for the study were Dia. 34 x Ht. 18centimetres as optimum amount of microgreens can be planted and harvested.

- **Growing Medium**

The growing medium selected for the cultivation of microgreens were coco peat, black soil and vermicompost in combination with sand in 1:1,2:1 and 3:1 ratios respectively. These three growing media were selected because they resulted in higher yield and growth of microgreens (Machfudz, 2021).

Coconut husk is the main ingredient of the cocopeat. It has the ability to absorb and hold water, making it the better growth medium. Compared to other two media, the cocopeat was found to be the best medium for the cultivation of microgreens as it has many nutrients that supports its growth (Dalal, 2022).

- **Microgreen Seeds**

Six varieties of microgreen seeds were selected because these varieties were known to have higher yield and faster growth compared to other microgreens. The six varieties of microgreen seeds were purchased from the nurseries. It is also available in online stores. Each packet procured contained 50 seeds.

- **Aluminium Foil Paper**

This was utilized to cover the pot after sowing seeds to black out. This process is called blackout period. The blackout period was for 8 – 9 hours. It is necessary for the proper growth and germination of microgreens. The Aluminium foil was cut into the required shape which was adequate enough for covering the mud pots. Microgreen seeds after sowing are subjected to this blackout period, in which the sown mud pots are either stacked or covered to prevent the exposure of light.

- **Water Sprayer**

A water sprayer was utilized to spray water on the sown microgreen seeds. The sprayer was consciously selected as it can uniformly disperse the water over the required surface area. Any other means of watering could result in excessive or inadequate or uneven spread of water content which might affect the growth of greens.

- **Scissors**

Scissors were used to harvest the microgreens when they attain maturity. Sterilized scissors were used for the harvest of microgreens. Sterilization was done by placing the scissors in boiling water of 70 degree Celsius. The duration

for sterilization was 30minutes. Sterilized scissors were used to prevent microbial contamination of microgreens which are harvested using it (Giesbrecht, 2016).



Plate II: Minor Tools and other Accessories Used for the Study

The research study was approved by the Institutional Human Ethics Committee of Avinashilingam Institute for Home Science and Higher Education for Women AUW/IHEC/FSMD-19-20/XMT-29(Appendix I).

3.1.2. Pilot Study to Select the Best Media, Lighting and Watering Method for Growth of Microgreens

The pilot study was conducted to analyze the best growing medium, watering method and lighting condition suitable for the conduct of the study. Mustard as a microgreen was selected for the conduct of the pilot study. Based on the pilot study results, the best growing medium, watering methods and lighting were finalized, and further study was carried out.

3.1.2.1. Determination of Best Growing Medium

The growing medium which was selected to produce microgreens are

- i. Vermicompost and Sand
- ii. Black Soil and Sand
- iii. Coco Peat and Sand

i. Growing Medium Composed of Vermicompost and Sand

The growth of microgreen was analyzed using the vermicompost and sand. The growing medium was prepared by mixing vermicompost and sand in different ratios of 1:1,2:1 and 3:1 respectively. Kitchen waste can be utilized to produce vermicompost.

Using growing medium like kitchen waste is the best way to achieve the sustainable agriculture and an excellent way to avoid chemical fertilizers for the growth of plants. (Nath *et al.*, 2009). Vermicompost is a suitable medium as it is an organic approach for the cultivation of microgreens and will have reduced environmental effects. (Sallaku *et al.*, 2009)

ii. Growing Medium Comprising of Black Soil and Sand

The growth of microgreen was analyzed and recorded. According to Duan *et al.*, (2009). The black soil was found to be one of the good sources in providing adequate nutrients to microgreens.

iii. Growing Medium Consisting of Coco Peat and Sand

As a third option, the microgreens were grown using cocopeat and sand as the growing medium. The growing medium was prepared by mixing the cocopeat and sand in different ratios of 1:1,2:1 and 3:1 respectively. According to Awang *et al.*, (2009), cocopeat was found to be the best for the growth of microgreens as it has good pH and water holding/retention capacity.



Plate III: Microgreens Cultivated in Different Growing Media

3.1.2.2. Determination of Best Lighting Condition for Microgreen Growth

The microgreens were analyzed by subjecting them to various intensities of light. The microgreens were studied by exposing them to:

- i. Direct Lighting (full exposure to sunlight)
- ii. Indirect Lighting (indirect exposure to sunlight)
- iii. *Light-Emitting Diode (LED) Lighting*

i. Direct Lighting

Direct lighting is the process of obtaining light directly from the sun for the growth of microgreens. The microgreen containing mud pots were exposed directly to sunlight and the changes were analyzed and recorded.

ii. Indirect Lighting

Indirect lighting is achieved by preventing the direct exposure to sunlight. The microgreen was subjected to partial sunlight by keeping the mud pots containing microgreens in shade and the changes in its growth were recorded.

iii. *Light-Emitting Diode (LED) Lighting*

The microgreens were placed in a room with LED bulbs to study the extent of growth of the greens. LED lighting resulted in increased yield of crops (Massa *et al.*, 2008).



Plate IV: Direct, Indirect and LED Lighting

3.1.2.3. Determination of Best Watering Method for Microgreen Growth

Two different watering methods were used to study the growth of microgreens i.e.

- i. Top Watering and
- ii. Bottom Watering

i. Top Watering

The top watering involves the sprinkling of water on the top portion of the mud pot sown with greens. The micro green was watered on its top layers using the water sprayer.

ii. Bottom Watering

The bottom watering method involves having stagnant water in contact with the bottom portion of the mud pot containing the media and micro green seeds. For this type of method, the mud pot which has been drilled (hole) in its bottom was used. A base was selected where water was sprayed and the mud pots with holes in the bottom were placed on top of it.



Plate V: Top and Bottom (Porous Pot with Base) Watering Methods Used

3.1.2.4. Analysis of the Growth Medium

The laboratory analysis of the growth media was done. The cocopeat was tested to determine the nutrient content of the medium in which the microgreen was grown. The test was also done to elicit the microbial count in the growth media.

3.1.2.5. Cultivation Process of Microgreens

Microgreens were grown in mud pots and the growth pattern was further analyzed.

Microgreens are easy to cultivate and harvest in semi-urban and urban environments, and they are served as fresh salads right from the pot in a variety of restaurant chains in India and across the world. Because of their brief lifespan, they require little inputs in terms of fertilizers, nutrients, water, soil, and space (Brazaityte *et al.*, 2015).

Cultivation of microgreens is discussed under different steps:

Step I : Preparation of The Mud Pots

Step II : Sowing of Seeds

Step III: Covering the Mud Pot

Step IV: Watering the Seeds

The detailed process of cultivation is described below.

Step I: Preparation of the Mud Pots

The mud pots used for sowing of the microgreen seeds were of the measurement of Dia. 34 x Ht.18 cm. Wet the mud pot by sprinkling little water and spread the coco peat and sand evenly. Sprinkle some more water over the peat after spreading evenly.

Step II: Sowing of Seeds

Transfer the entire seeds from the packet into a container and scatter the seeds over the mud pot filled with growing media by shaking the container so that it is distributed equally across the surface area of the mud pot. Each packet contained 50 microgreen seeds. These were adequate for the cultivation as one separate pot.

Step III: Covering the Mud Pot

Cover the mud pot with aluminum foil and place the mud pot in a darker area. This was done for 8 hours.

Step IV: Watering the Seeds

Water the seeds twice a day by removing the cover and placing the foil over the mud pot. The water should be sprinkled. Continue this for approximately 6 days, then remove the lid and set the pot in a location where it receives sunlight. On the seventh day the microgreens will be harvested.



Plate VI: Cultivation Process of Microgreens



Plate VII: Stages of Growth of Microgreens

3.1.3. Cultivation of Selected Microgreens (N=6) in Optimal Growth Medium, Lighting Condition and Watering Method

Based on the results of pilot study, all the six selected microgreens (Mustard Microgreen, Chia Microgreen, Fenugreek Microgreen, Beetroot Microgreen, Sesame Microgreen, Radish Microgreen) were cultivated in the best growth medium, suitable lighting condition and watering method. After cultivation the growth was analysed in terms of stem length, leaf size and leaf length.

3.1.4 Analyzing the Growth of Cultivated Microgreens

The selected varieties of microgreens were grown in an eco-friendly way. The growth of microgreens was analyzed each day and findings were recorded. They were grown in mud pots in the medium containing coco peat. The microgreens were grown with sufficient water, a water sprayer was used for pouring the water in the correct amount. The harvesting of the microgreens was done using sterilized

scissors. The length of the stem and leaf size of the microgreens were analyzed using the Vernier caliper. The analysis with Vernier caliper was found to be adequate for getting the accurate results for the stem length and leaf size (Keutgen, 2021).



Plate VIII: Measuring Microgreens using Vernier Caliper

3.1.5. Comparing the Growth of Selected Microgreens under Different Conditions

The design of experiments was used to assess the effect of different variables on the growth of microgreens. For each selected microgreen, parameters such as the leaf length, leaf size and stem length were measured to analyse the impact of each variable.

Among the three selected media namely vermicompost, black soil and cocopeat, the growth of microgreen in cocopeat was found to be the best and hence cocopeat was selected as the preferred media conduct further study on the six selected micro green varieties

Three different lighting conditions were used to grow the microgreen in the pilot study. The lighting methods were direct sun light (direct lighting), indirect lighting (partial sunlight) and LED lighting. Maximum growth of micro green was observed in the indirect lighting method. Hence this method of lighting was chosen for further cultivation.

Among the two types of watering methods, top watering method yielded the best output of microgreens when compared to the bottom watering method. As a result, it was resolved to use top watering method for further study.

3.2. Phase II: Analysis of Microgreens and Formulation of Microgreen Based Recipes

3.2.1. Analysis of Micronutrients in Cultivated Microgreens and their

Comparison with the Mature Counterparts

The nutrient content of the fully matured microgreens was analyzed for micronutrients. The vitamins including Vitamin A, Vitamin D, Vitamin E, Vitamin K, Vitamin C, Thiamine, Riboflavin, Niacin, Pantothenic Acid and Folic Acid and micronutrients like Calcium, Phosphorous, Iron, Selenium, Potassium, Sodium, Magnesium, Fluoride, Manganese, Zinc and Copper were analyzed using the AOAC method (Appendix II) for the selected varieties of harvested microgreens. The nutrient content of the fully matured microgreens was analyzed for micronutrients. The vitamin and mineral content of the microgreens are then compared with the mineral and vitamin content of the mature counterparts.

3.2.2. Determination of Phytochemical Content in Selected Microgreens

Microgreens were reported to be the highest source of antioxidants (Ghoora, 2020). Therefore a quantitative estimation of phytochemicals including flavonoids, total antioxidant activity, chlorophylls, and β -carotenoids contents in the selected microgreens were analyzed. The methods which were used for the estimation of flavonoids was aluminum chloride calorimetric assay. The total antioxidant activity was identified using phosphor-molybdenum method. Chlorophylls and β -carotenoids present in selected microgreens were identified by method of Yang *et al.*, (1998). The antioxidants & phytochemicals such as flavanoids, total antioxidants, total carotenoids and chlorophyll were analyzed (Appendix III).

3.2.3. Analysis of Heavy Metals in Selected Microgreens

Usually the greens cultivated in soil were reported to have various heavy metals (Lenzi *et al.*, 2019). Hence the microgreens which was grown in cocopeat was analyzed for the presence of heavy metals by using AOAC method (Appendix IV).

3.2.4. Determination of Shelf Life of Selected Microgreens

The shelf-life analysis of microgreens was conducted in different storage conditions and in different containers. They were stored in food grade plastic container, glass container, stainless steel container and paper bag. The atmospheric conditions chosen for conducting analysis were normal room temperature and refrigerator temperature.

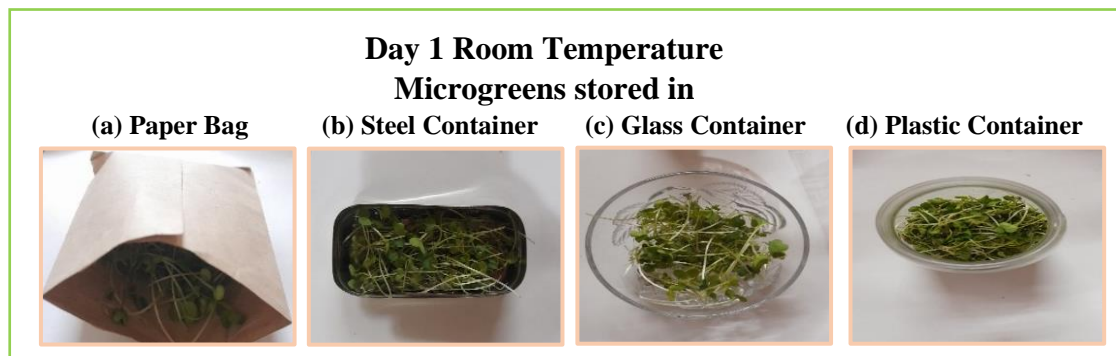


Plate IX: Shelf Life Determination at Room Temperature - Day 1

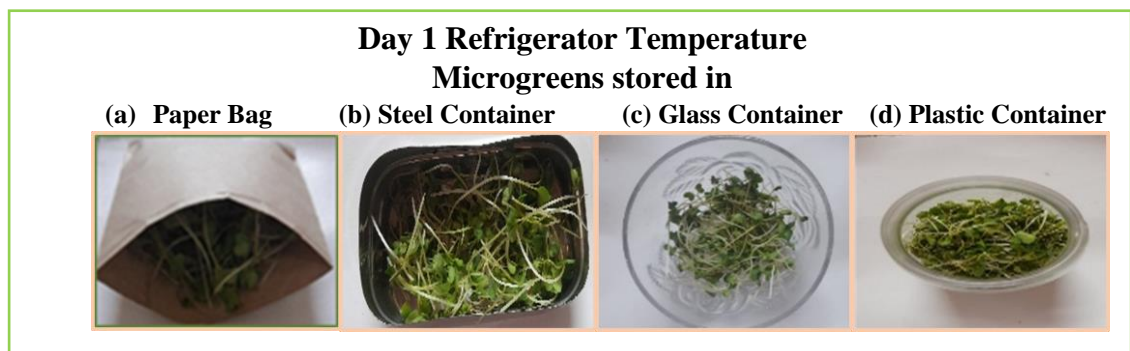


Plate X: Shelf Life Determination at Refrigerator Temperature - Day 1

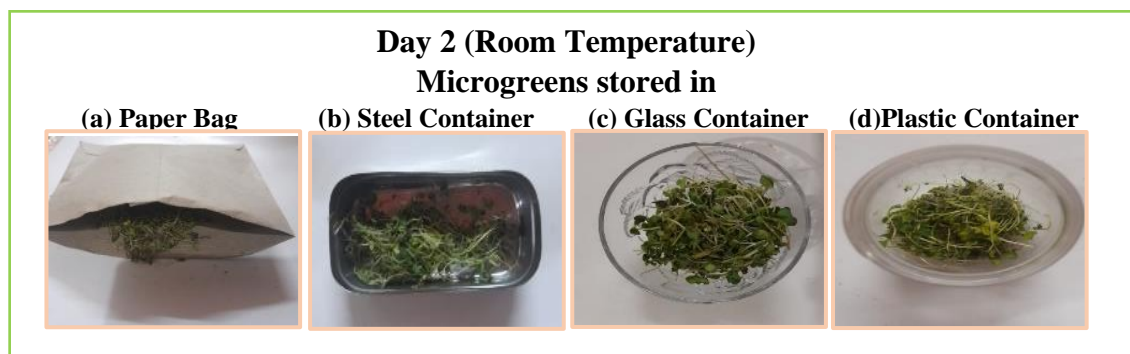
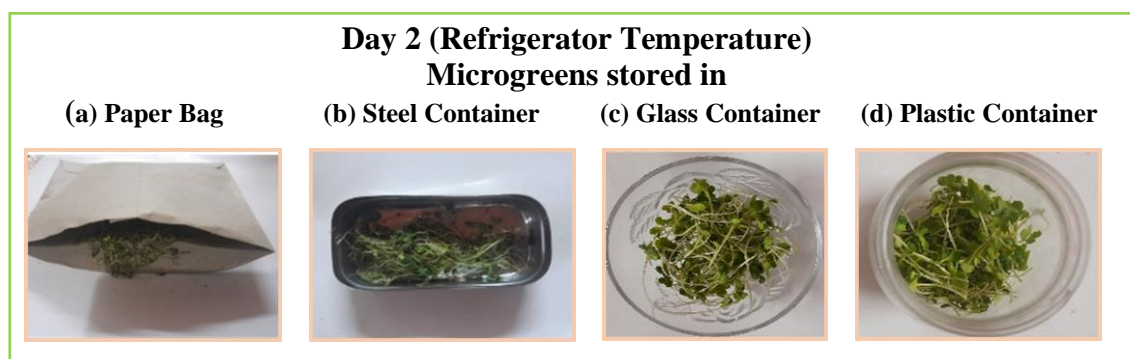


Plate XI: Shelf Life Determination at Room Temperature - Day 2



XII: Shelf Life Determination at Refrigerator Temperature - Day 2

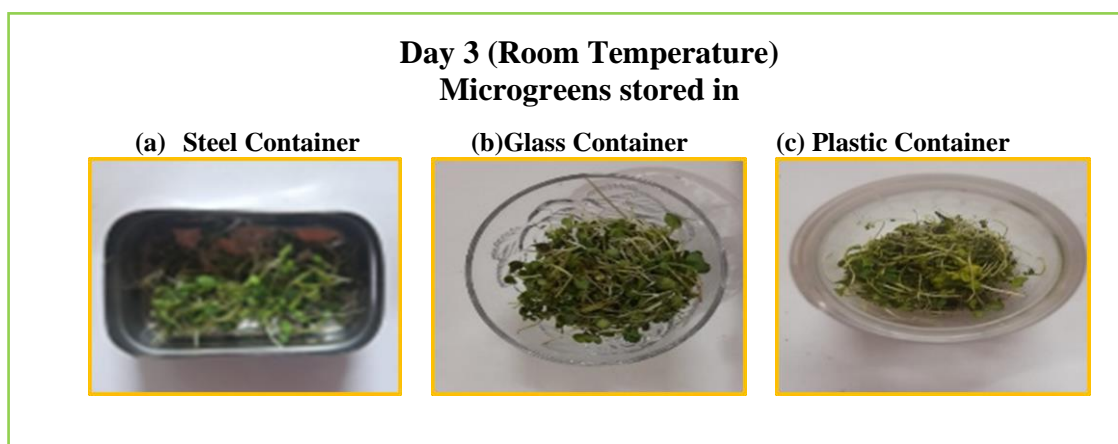
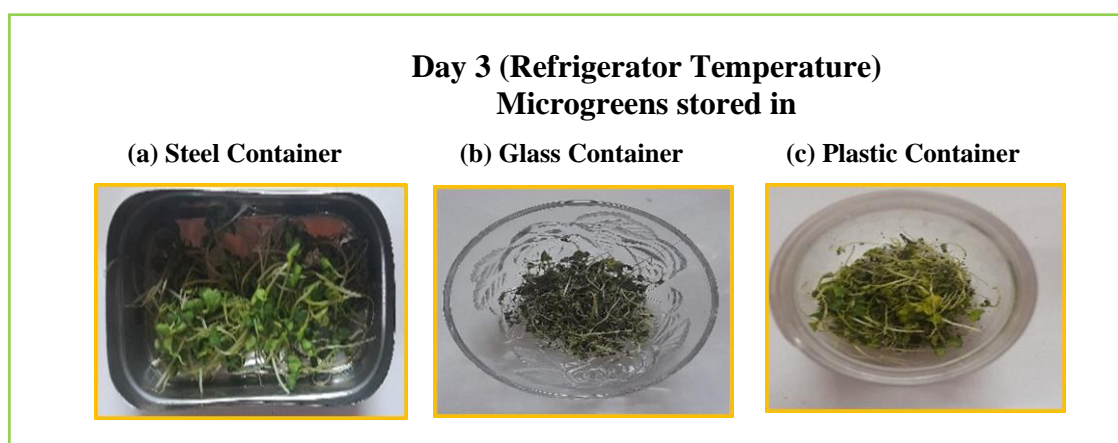


Plate XIII: Shelf Life Determination at Room Temperature - Day 3



Phase XIV: Shelf Life Determination at Refrigerator Temperature - Day 3

3.2.5. Formulation of Recipes with Cultivated Microgreens

The cultivated microgreens were used for the preparation of various value-added recipes. The recipes include Ready To Cook, Ready To Eat foods, starters, main dish, side dish, desserts, salads and juices.

- **Starters**

The starter is often the first course of a meal, served directly before the main course. The starters prepared using cultivated microgreens were Vibrant spring soup, Green goddess dressing, Green bajji, Green balls, Green rolls, Healthy green momos, Green Semolina veggie rolls, Green dal vada, Green Kabab and Green fritters. 50g of each microgreens were incorporated in all the starter recipes along with other ingredients to improve the micronutrient content.



Plate XV: Microgreen Based Starters Prepared

- ***Ready To Eat***

Ready-To-Eat (RTE) foods are a type of food that has been pre-cleaned, precooked, packed, and is ready to consume without any prior preparation or cooking. The prepared Ready To Eat foods with cultivated microgreens were Green bhel puri, Green pea dip, Green fries, Nutria mix, Instant green dip, Green pizza base, Green cookies, Green jam, Green pickle and Green mayonnaise. To improve the micronutrient content of the recipes, here again 50 g of all the selected microgreens were incorporated in the prepared Ready To Eat recipes.



Plate XVI: Microgreen Based Ready To Eat Products Prepared

- **Ready To Cook**

Ready-To-Cook foods are processed or pre-prepared foods that need minimal extra efforts to make. They are also known as convenience foods. The Ready To Cook dishes prepared with microgreens were Green leaves steam cake powder, Soup powder enriched with greens, Green custard powder, Healthy noodles, Instant green payasam mix, Ready To Cook green uppuma mix, Instant sambar mix , Instant rasam powder, Green pancake mix and Soup Mix. As a standard measure 50 g of each of the microgreen were added in all the Ready To Cook recipes to improve the micronutrient content.



Plate XVII: Microgreen Based Ready To Cook Products Prepared

- **Main Dish**

Microgreens can also be substantial enough as a main dish with one of the high protein foods such as meat, fish, egg or cheese forms as the base. The main dishes which were prepared using microgreens include Green ela ada, Breakfast wraps, Green chappathy, Green biriyani, Green sandwich, Green idiyappam, Green kozhukatta, Green orotti, Green masala rice and Green Puttu. Only 20g of three selected varieties of microgreens were added together in each recipe for improving the micronutrient content.



Plate XVIII: Microgreen Based Main Course Prepared

- **Side Dish**

Side dishes are ought to be small, dainty, and toothsome. They add variety to the menu and diet. The side dishes prepared using microgreens were Green chutney , Green pachadi, Green buttermilk, Green thoran, Green eruchery, Green dal curry, Green kulambu , Greens gram curry, Go green bowls and Green mezhukuperatty. Similarly three micro greens weighing 20 g each were added in each side dish recipe to improve the micronutrient content.



Plate XIX: Microgreen Based Side Dish Prepared

- **Salads**

Salads can be defined as a dish of raw, cold, or warm cooked foods, usually dressed and seasoned, served as an appetizer, side dish or main course. Salads are usually fresh and have stimulating flavor. The salads prepared with microgreens include Sprouts green salad, Nutri salad, Protein green salad (cereals, pulses green mix), Green fruit salad, Fish Green salad, Grilled green veg salad, Chicken green salad, Classic green salad, Mixed green salad and Roasted vegetable salad with green mix. 20 g of three selected varieties of microgreens are added together in each recipe for improving the micronutrient content.



Plate XX: Microgreen Based Salad Prepared

- **Juices**

Juice is a drink made from the extraction or pressing the fruit and vegetables. The juices prepared with microgreens was green lime juice, green cucumber juice, green mojito, green kiwi juice, amla green juice, green mango juice, green passion fruit juice, green apple juice, green freshener juice and green mint juice. Each microgreen weighing 50gm was added to all the juices individually to improve the micronutrient content.



Plate XXI: Microgreen Based Juice Prepared

- *Desserts*

Dessert is a course that concludes a meal. The course consists of sweet foods such as confectionaries, ice-creams, biscuits, cookies, cakes, gelatins, puddings, pies, macaroons, sweet soups, fruit salads, custards, etc. The prepared desserts with microgreens were Khulfi, Green fruit yoghurt, Green pudding, Green khoa, Green mix stuffed gulab jamuns, Green Honey cake, Green praline, Nutrient rich macroons, Green custard and Biscuit cake. A random combination of three microgreens weighing 20g each were added together in each desserts for improving the micronutrient content.



Plate XXII: Microgreen Based Dessert Prepared

3.2.6. Determination of Nutritive Value and Sensory Evaluation of the Developed Microgreen Based Recipes

3.2.6.1. Determination of Nutritive Value of Microgreen Based Recipes

The nutritive value of the microgreen recipes was calculated and compared with the Recommended Dietary Allowances. Nutrients calculated for each meal were summed up and specific nutrients like calories, carbohydrates, protein, fat, fiber, calcium, phosphorous, potassium, iron, zinc, vitamin A, vitamin C and vitamin E per day were calculated. The calculated nutrients were presented along with the recipes (Appendix V).

3.2.6.2. Sensory Evaluation of the developed Microgreen Based Recipes

Considering the importance of sensory evaluation, recipes were examined by semi-trained panel members. Based on the score obtained during the evaluation, the

dishes were graded from most acceptable (highest score) to least acceptable (lowest score). The organoleptic evaluation of the formulated recipes with microgreens was done using 9 point hedonic scale. The 9 points hedonic scale was considered for its reliability, acceptability, and discriminative ability. The test was conducted to evaluate characteristics such as color, taste, appearance, flavor, and overall acceptance. Recipes were presented to each of the panelist. Each of the panelists tasted the recipes and gave scores from 1 to 9, where 9 indicates the best acceptability and 1 represents the least acceptability.



Plate XXIII: Sensory Evaluation of Microgreen Based Recipes

3.3. Phase III: Determination of Knowledge, Attitude and Practices (KAP) on Microgreens and Creating Awareness on Cultivation and Importance of Microgreens among Selected Subjects (Self Help Groups - Kudumbashree)

3.3.1. Assessment of Pre-Knowledge, Attitude and Practices (KAP) on Microgreens among Selected Subjects (Self Help Groups - Kudumbashree)

3.3.1.1. Selection of Subjects

The subjects selected were from the self-help groups situated at Kottayam district, Kerala. Married women were selected for the study. Women of age group between 35-65 were selected.

The sample size was determined using the formula by Vishwakarma., (2017). Based on the formula, the sample size was determined as 100 numbers, hence the same number of subjects were selected for the conduct of the study.

$$\text{Sample Size} = (Z\text{-score})^2 * \text{Std Dev} * (1 - \text{StdDev}) / (\text{margin of error})$$

The samples were selected using the purposive random sampling method. Judgmental or subjective sampling method is the other term for purposive sampling method, is a form of non-probability sampling. In purposive sampling method, the participants among the population are selected based on the judgment of the researcher itself (Kothari *et al.*, 2019).

3.3.1.2. Assessment of Pre-Knowledge Attitude Practices (KAP) on Microgreens

The Knowledge Attitude and Practices (KAP) survey is a quantitative method (predefined questions formatted in standardized Interview Schedule) that provides access to quantitative and qualitative information (Appendix VI).

Knowledge on healthy behaviour is considered to be beneficial. Although, it does not guarantee that this behaviour will be followed. The survey's assessment of knowledge assists in identifying areas where information and education activities are to be exerted. Knowledge was assessed using the Interview schedule that contains background information and socio economic status of the subjects. Knowledge regarding importance of microgreens and presence of nutrients in the same,

consumption pattern of greens and importance of kitchen garden were assessed from the selected subjects.

Attitude questions on the need of microgreen farming, general attitude towards the microgreen cultivation, attitude that the microgreen seeds are not available for purchase and expensive for cultivation were analyzed.

Practices or behaviours are the observable actions of an individual in response to a stimulus. The questions regarding the practice of microgreen farming in home garden, encouraging the consumption of microgreens in family and the practice of continuing the microgreen farming in future were recorded

Before the assessment, the subjects were oriented about the study and this helped in smooth conduct for collection of data. The majority of the questions were structured as Yes or No questions. The correct answers were awarded 1 point and the wrong answers were not given any score (zero). The total score was fixed to 25. The samples who got more than 10 points were considered as having more knowledge and those having a score of less than 10 were considered to have less awareness.

According to Krueger, (2015), the evaluation can be done better if the investigator fix a score for the pre and post knowledge assessment.

3.3.2. Imparting Awareness to Selected Subjects (Self Help Groups

(Kudumbashree) on Cultivation and Importance of Microgreens

Alive training session was conducted the selected subjects on the cultivation techniques of microgreens and its importance for self-help groups. The sessions were conducted with the help of the minor tools and the necessary accessories used for the cultivation process of microgreens like mud pots, microgreen seeds, cocopeat and water sprayers.

3.3.3. Assessment of Post Awareness Knowledge among Self-Help Groups

(Kudumbashree) on the Cultivation of Microgreens

Before the training session an interview schedule was given to the selected samples for assessing their knowledge on the microgreens. The live training session has helped the homemakers to motivate themselves and do the cultivation process of microgreens in their kitchen garden. This was indeed used for generating information on the cultivation and importance of microgreens among the selected samples.

After the live training session, the schedule was given to the same samples to assess their knowledge and feedback on the session. The scoring was done in same method as it was done for the pre awareness session. The pre awareness and post awareness knowledge scores were recorded and analyzed.



Plate XXIV: Knowledge Analysis on the Importance of Microgreens



Plate XXV: Live Training Session on the Cultivation and Importance of Microgreens

3.3.4. Data Interpretation and Statistical Analysis

After the conduct of the study, the interpretation of the data was done. Both descriptive and inferential statistics were used for data interpretation.

Descriptive statistics such as mean was used as a measure of central tendency and standard deviation was used as a measure of dispersion. Mean and standard deviation of the sensory evaluation scores were calculated to determine the overall acceptability of all the developed microgreen based products.

Inferential statistics such as the F test that is the Analysis of Variance (ANOVA) was applied to determine the difference between the variables. In the study, mean difference between the variables such as the leaf size and stem length according to the type of microgreens and the day of cultivation was determined.

The reliability of the developed interview schedule was determined using factor analysis. The Kaiser-Meyer-Olkin measures of sampling adequacy (KMO) and Bartlett's Test of Sphericity have been applied to test whether the relationship among the variables has been significant or not.

Design of experiments was used to compare multiple variables such as the impact of different type of lighting conditions, watering methods and growing medium on the stem length of microgreens.