METHODOLOGY

-EXAMINING ENHANCED KOMAGATAEIBACTER HANSENNI PRODUCTION VIA UNCONVENTIONAL FOOD WASTE-

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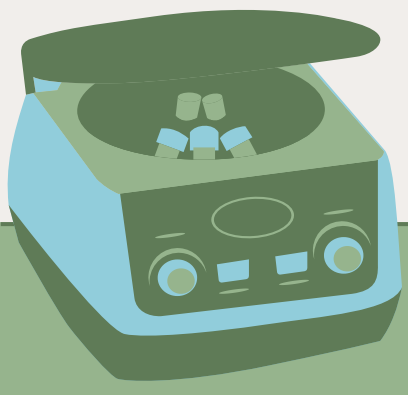
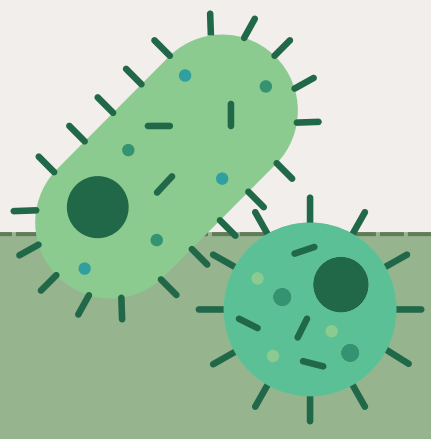


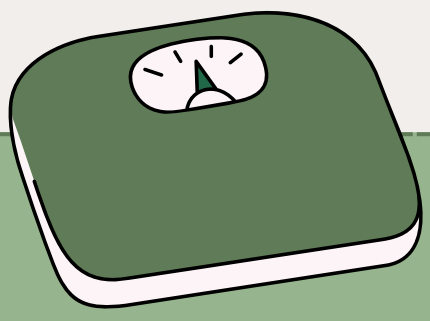
STERILIZING FOOD SOURCE

For this experiment, mango peel extract was used. In order to prepare it to be used as a culture medium, it had to be completely sterilized to avoid any contamination. The extract was put through a centrifuge to separate any pulp, and then sent through a Nalgene filtration system to filter out any remaining bacteria.



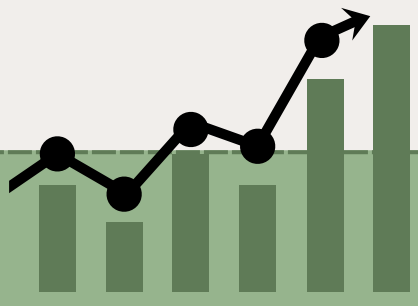
GROWING THE BACTERIA

2 separate groups, 50% mango peel media and 50% HS media, and 100% media were set into 2 24-well plates (only the middle 8 wells were used to avoid evaporation). These well plates were then set into the incubator for 2-3 days to let the bacteria grow.



MEASURING WEIGHT

After the bacteria had grown and the cellulose was produced, the well plates were taken out of the incubator and the wet mass of each sample would be taken and recorded. From there, the average mass of each group could be calculated and compared against each other to determine which culture medium produced a higher yield.



XRD ANALYSIS

One sample from each group would be completely dried and in separate turns, placed into the Rigaku instrument to run an XRD test on them, for 8 minutes each. The resulting graphs produced by the analysis could be compared to one another to determine where the peaks of each graph lied and whether or not they were located at similar points. If they were, this shows that they share similar crystallinity, an important property of bacterial cellulose.

PURPOSE OF THE PROJECT

Bacterial cellulose has numerous worldly applications, especially in the biomedical field, as a result of its unique properties. Knowing this, if food waste is an efficient alternative option of the culture medium in place of typically used mediums, this will not only save a substantial amount of money, but this will be doing the environment a favor as food waste continues to be a major issue in today's society.