The Use of Manihot esculenta Starch for Inhibition and Prevention of Bacterial Growth

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Sustainable chemistry, consists of chemistry directed towards the design of chemical products and processes where the reduction or elimination of products of harmful materials is implied for people, animals and the environment. It was investigated the possibilities that exist to use the Manihot esculenta (cassava) starch, as an inhibitor of bacterial growth. Cassava starch is economical at industrial level. To prove it, the starch of Manihot esculenta was extract using distilled water. Also, it was prepared with adding a commercial polymer. The experimentation consisted in six Petri plates with Nutrient Agar; three petri plates with Pseudomonas aeruginosa and three of them with Escherichia coli. To prove our hypothesis, we used the disk diffusion antibiotic susceptibility test or Kirby Bauer Method. Each one was divided in three sections; one section has a inhibition disc with distilled water (negative control), the second one with cassava starch and the last one, with polyvinyl alcohol. The plates were incubated for a period of 48h at 37? C to corroborate the bacteriostatic effectiveness. The results showed that starch and polymer could inhibit growth in P. aeruginosa, but not in E. coli. It concluded that the Manihot esculenta polymer can function as an inhibitor for certain bacteria as P. aeruginosa, but not for all of them. For future projections we can work with different concentrations of cassava starch extract, study its effect on other bacterial genera and will compare the effectiveness with other natural plant extracts.

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