

Improving the Dental Health in Developing Countries With a Toothpaste Infused With *Psidium guajava* and *Acmella oleracea* Extracts Against Tooth Decay Causing Bacteria *Streptococcus mutans*

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Oral diseases such as tooth decay are expected to affect roughly 3.5 billion individuals worldwide. In most developing countries, access to primary oral health treatments is limited due to an unequal distribution of oral health specialists and a lack of health facilities. This project focused on investigating how extracts of *Psidium guajava* and *Acmella oleracea* can prevent the growth of tooth decay causing bacteria *Streptococcus mutans*. Ethanol extraction and rotary evaporation was performed to collect the extract from *P. guajava* leaves and *A. oleracea* buds. Pure colonies of *S. mutans* were obtained using the streak plate method and Kirby-Bauer Sensitivity Assay was utilized to test the antibacterial effects of the plant extracts and toothpaste infused with the plant extracts. Zones of inhibition were measured and analyzed. The results of the experiment showed that both plant extracts were able to prevent the growth of *S. mutans* with zones of inhibition measuring higher than 16mm. The toothpaste infused with the plant extracts showed a greater antibacterial effect against *S. mutans*. Results are supported by paired t-test with all p values <0.05. In conclusion, the toothpaste infused with extracts of *Psidium guajava* and *Acmella oleracea* had significant antibacterial effect against tooth decay-causing bacteria *Streptococcus mutans*. The created toothpaste will be a great solution to dental health problems around the world. The plants tested in this project are readily available in almost every developing country

Keywords: *Streptococcus mutans*, dental health, *Psidium guajava*, *Acmella oleracea*

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