In vitro Study of the Antibacterial Properties of Azadirachta indica of Oral Lactobacillus acidophilus to Prevent Dental Caries

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Dental caries occurs as oral bacteria (such as Lactobacillus acidophilus) metabolize sugars and convert them into acid, thus removing calcium from the teeth. Natural herbal plants, such as Azadirachta indica (also known as neem) can be utilized to prevent oral bacterial growth and tooth decay as a way that is less expensive and more accessible to developing regions of the world in the form of teeth-cleaning twigs. Therefore, in this study, the following question was asked: How does the application of Azadirachta indica to Lactobacillus acidophilus affect its growth rate and metabolic activity? The Snyder colorimetric test was utilized to assess the metabolism of Lactobacillus acidophilus. If neem is effective in reducing bacterial activity, acid will not be formed and the indicator will become blue. If neem is ineffective, bacteria will produce acid and the indicator will remain green or become yellow. Examining the color of the pH indicator and scanning petri dish images with imaging software, it was seen that the petri dishes without neem had an overall color range of yellowgreen, showing that the Lactobacillus was actively converting sugars in the agar into acid. The petri dishes with 0.25 grams of neem had the greatest blue color. Observing the color trends in the petri dish, the hypothesis was proven correct that neem decreases Lactobacillus metabolic activity, as seen by a blue to cyan color range of the pH indicator and high mean intensity of cyan as measured by the imaging software. Upon observing such results, it can be implied that neem acts similarly in the mouth to maintain oral pH levels and can effectively prevent dental caries.

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