ABSTRACT

Ni-Hsi Day (00000021819)

ANTIBACTERIAL ACTIVITY OF GUAVA (*Psidium guajava* L.) LEAF EXTRACT HARD CANDY ON UPPER RESPIRATORY TRACT INFECTION-CAUSING BACTERIA

Thesis, Faculty of Science and Technology (2020)

(xi + 69 pages: 17 figures, 13 tables, and 11 appendices)

Guava (*Psidium guajava* L.) leaves have long been the subject of diverse research initiatives that aim to explore its antimicrobial activity against various bacteria. In extract form, it may have potential in inhibiting the growth of two common upper respiratory tract infection (URTI) bacteria, *S. pyogenes* and *P. aeruginosa*. The aim of this research was to determine the effect of solvent type used (hexane, ethyl acetate, and ethanol) for extraction on the antibacterial activity of the resulting guava leaf extract, and to formulate it into hard candy at a concentration that yields positive results in terms of both antibacterial activity against *S. pyogenes* and *P. aeruginosa* as well as sensory acceptability. To aid in the sensory acceptability aspect of the hard candy, lemongrass oil was used in varying concentrations as a flavoring agent. In this research, ethanol guava leaf extract showed the strongest antibacterial efficacy against both *S. pyogenes* (MIC=721.21 ppm) and *P. aeruginosa* (MIC=3085.91 ppm). To effectively inhibit the growth of both bacteria, subsequent formulation of the extract into candy was based on an MIC of 3085.91 ppm. The selected guava leaf extract was formulated into the hard candy at concentrations of 2MIC to 5MIC, while lemongrass oil was used at 0, 0.15, and 0.3% concentrations. Analysis showed that extract concentration affected the antibacterial activity of the resulting candy, while lemongrass oil did not. However, lemongrass oil concentration affected the sensory acceptability of hard candy. 4MIC guava leaf extract and 0.15% lemongrass oil were selected as the preferred formulation for hard candy in terms of hedonic ratings of overall acceptability (4.92 ± 1.68) and antibacterial activity.

Keywords : Guava leaves, *Psidium guajava* L., guava leaf extract, hard candy, URTI

References : 58 (1991-2019)