

## Preparation of Semi-Solid Dosage Forms Containing Psidium Guava Leaves Extract as Antimicrobial Preservative

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### ABSTRACT

Guava leaves extract has several medicinal activities as antimicrobial, antioxidant, anti-cancer and anti-inflammatory. Several studies have been proposed to use guava leaves extract in several preparations. However, applying guava leaves extract as a preservative in a pharmaceutical product has not been studied previously. In the present work, Guava leaves extract was used as natural preservative instead of chemical ones (methyl and propyl paraben). Guava leaves were extracted with ethanol 95% as extraction solvent with a percentage yield of 20%. This extract was tested by HPLC; several phenolic compounds were detected. To determine the ability to use this extract as a preservative, antimicrobial effectiveness test (preservative efficacy test) was conducted for extracted powder in purified water at different concentrations (0.5, 1.0, 1.5, and 2.0 % w/w), against three bacteria, one gram-positive (*S. aureus*), two gram-negative (*P. aeruginosa*, *E. coli*) and two fungi: one yeast (*Candida albicans*) and one mold (*Aspergillus (Niger) brasiliensis*). Results showed that 2% was effective and passed the test of preservative effectiveness test; this concentration was used in semi-solid pharmaceutical products. For this purpose, six different preparations (Ketoconazole shampoo, Clotrimazole Cream, Permethrin Cream, Gentamycin Cream, Ibuprofen gel, Indomethacin emulgel) were used. Chemical preservative was replaced by natural one (guava leaves extract powder) to serve as a preservative. Three out of the six preparations (Ketoconazole shampoo, Clotrimazole Cream, Ibuprofen gel,) passed preservative efficacy test. These preparations were fully checked-up by chemical (drug content,) physical (odor, physical appearance) and biological test (total count test) for three months at accelerated conditions. These results confirmed that these pharmaceutical preparations were stable and effective. As a conclusion Guava leaves extract can be used at 2% as natural preservative instead of chemical ones which have adverse side effects on human health.