SOME FORMULATION STUDIES OF TOOTHPASTE USING EUGENOL RICH FLAVOUR AND CALCIUM CARBONATE

A PROJECT REPORT PRESENTED BY

N.M Nushan Indika Udaya Kumara

to the Board of Study in Chemical Sciences of the

POSTGRADUATE INSTITUTE OF SCIENCE

in partial fulfillment of the requirement

for the award of the degree of

MASTER OF SCIENCE IN INDUSTRIAL CHEMISTRY

of the

UNIVERSITY OF PERADENIYA

SRI LANKA

2009

ABSTRACT

Incompatibility of eugenol with calcium carbonate was a major shortcoming of toothpaste development using calcium carbonate. This is mainly due to chemical reaction between eugenol, calcium carbonate and other raw materials in toothpaste. Liquid separation and flavour direction variation could be observed in calcium carbonate containing eugenol rich flavour toothpaste. As a practice, toothpaste with eugenol rich flavour was developed using Aluminum trihydrate and hydrated silica. Though Aluminum trihydrate prices are comparatively low in world market, it is reported to have health related disadvantages. Although hydrated silica is very good for formulae development, cost of the raw material is comparatively high. Formulae development research with calcium carbonate and eugenol has a judicious need in the world to reduce the cost of the formulae and reduce the health related disadvantages. Chemical reaction between calcium carbonate and eugenol can be minimized using optimum dosage of the ingredient mixing, introduction of high performance thickener Xanthan Gum and optimization of Sodium Lauryl Sulfate within the formulae. Ground calcium carbonate and Alumina toothpaste has very good fluoride stability than the precipitated calcium carbonate toothpaste. Microbial growth in calcium carbonate toothpaste could be observed in latter part of the stability period and Good Manufacturing Practices (GMP) should be followed in manufacturing of toothpaste.