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RATIYA KOMSRI : THE DEVELOPMENT OF *ANDROGRAPHIS PANICULATA* EXTRACT GEL. THESIS ADVISOR : PLEUMCHITT ROJANAPANTHU Ph.D., WANDEE GRITSANAPAN Ph.D., CHOLTICHA AMORNCHAT D.D.S, M.S. 133 p. ISBN 974-589-278-5

The objective of this study was to develop *Andrographis paniculata* extract gel for treatment of periodontitis. The dried aerial part of *A. paniculata* herb was extracted by using a soxhlet extractor. It was found that the fractions extracted with 95% ethanol, benzene and acetone, exhibited inhibitory activity against *Porphyromonas gingivalis* W50 which is an important periodontopathic bacteria. Acetone extract was selected to develop gel preparations by incorporating the extract into the mixture of glycerides (glyceryl monooleate) and triglycerides (sesame, soybean, sunflower and safflower oils), which forms liquid crystals in contact with water. Phase structure of gels was investigated by using polarizing microscopy. Differential scanning calorimetry was used to determine melting temperature of gels. *In vitro* release of andrographolide from gels was determined. Percent amount of andrographolide released when plotted as a function of the square root of time was linear indicating that the release rate was diffusion controlled. The addition of hydrophilic compounds (glycerol, propylene glycol, polyethylene glycol 400 and sorbitol solution) and appropriate amount of sodium chloride to gels accelerated the rate of andrographolide released and the plots of percentage of andrographolide released continued to be linear as a function of the square root of time. The prepared gels were more active against *P. gingivalis* W50 than the extract alone because oils in the gels had the ability to inhibit the growth of this microbe. In stability studies with increasing storage temperature, degradation rate of andrographolide in gel was more increased than in the extract. However, this gel stored at 4°C, 30°C and 45°C for 90 days had no difference in the inhibitory activity against *P. gingivalis* W50.