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WANIDA CAICHOMPOO : ANTIMICROBIAL ACTIVITIES OF VOLATILE OIL AND CURCUMINOIDS FROM *CURCUMA LONGA*. THESIS ADVISORS : WANDEE GRITSANAPAN, Ph.D., OMBOON LUANRATANA, Ph.D., MANSUANG WUTHI-UDOMLERT, M.Sc. 136 P. ISBN 974-662-694-9

Curcuma longa Linn. or turmeric (*Zingiberaceae*) is a medicinal plant widely cultivated in tropical regions. According to Thai traditional text books, fresh and dried rhizomes are used for peptic ulcer, carminatives, wound treatment and anti-inflammatory. Fresh and dried rhizomes which were extracted by hydro distillation yielded volatile oil 1.88 % and 7.02% (v/w), respectively while the yield of crude curcuminoids from dried rhizome was 6.95% (w/w). Dried powders were extracted with 95% ethanol and yielded crude ethanol extract 29.52% (w/w) which was composed of curcumin (11.6%), demethoxycurcumin (10.32%) and bisdemethoxycurcumin (10.77%). These extracts were tested for antimicrobial activities using agar diffusion method against 29 clinical strains of dermatophytes, 27 strains of yeasts, and 13 standard and 8 laboratory strains of bacteria. It was found that turmeric oil exhibited the best inhibiting activity against dermatophytes (26.1-46.0 mm) and it showed significantly better inhibition ($p<0.01$) against *Cryptococcus* than *Candida*. For bacteria, all extracts showed unsatisfactory activities except *Streptococcus pyogenes* (17.0 mm). Due to the best inhibition against dermatophytes, turmeric oil was tested for its minimum inhibitory concentration (MIC) by broth dilution method. It showed that MICs of freshly distilled and 18 month-old oils were 7.8 and 7.2 µg/ml, respectively. Crude ethanol extract could inhibit fungi, yeasts and bacteria but the activity was less than that of turmeric oil (6.1-26.0 mm). Curcumin, demethoxycurcumin, and bisdemetohxycurcumin showed low activities against all of the organisms while crude curcuminoids showed only inhibition against *Cryptococcus* (6.1-26.0 mm). The results of this antimicrobial study reveal that turmeric oil and crude ethanol extract should be further developed as medicinal or cosmetic products for skin diseases.