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PIMOLRAT PITAKVONGSAPORN : THE STUDY OF ANTIFUNGAL ACTIVITY, STABILITY AND SKIN IRRITATION OF TURMERIC CREAM. THESIS ADVISORS : WANDEE GRITSANAPAN, Ph.D., PANVIPA KRISADAPHONG, Ph.D., APICHATI SIVAYATHORN, M.D. 153 p. ISBN 974-664-990-6

Curcuma longa Linn. is a medicinal plant in the family Zingiberaceae. Its rhizome (turmeric) was extracted for volatile oil and crude curcuminoids with yields 1.60% (v/w) and 0.49% (w/w), respectively. Crude curcuminoids are composed of a main constituent, curcumin 10.21% (w/w). Turmeric oil (20%) and crude curcuminoids (0.026%) were formulated in form of cream. The antimicrobial activities of turmeric cream were tested by broth dilution method. The turmeric cream could inhibit 29 strains of dermatophytes at average MIC 16±10 mg/g while slightly inhibiting yeasts and bacteria at MIC >37.76 and >35.39, respectively.

The stability of turmeric cream in points of physical and chemical characteristics and biological activities were tested comparing fresh cream and old creams that were stored at various storage conditions. Main component (ar-turmerone) of turmeric oil shown by TLC dissappeared when turmeric cream was stored at 50 ^{0}C for 4 months. Antifungal activity of turmeric cream stored at 4 ^{0}C for 4 months was found to not be significantly different ($p>0.05$) from fresh cream. However turmeric cream which was stored at 4 ^{0}C for 6 months or stored in an accelerated manner for 6 cycles showed significantly decreasing antifungal activity ($p<0.05$) compared with fresh cream.

Skin irritation of 5 cream preparations was tested by a 21-day cumulative irritation method in 22 volunteers, 10 women (aged 21-35 years) and 12 men (aged 21-32 years). Twenty percent turmeric cream, 6% turmeric cream and 6% turmeric cream without curcuminoids showed that the irritation reaction could be observed from day 7, 14 and 10 on, respectively while their IT_{50} could be observed at 14.5, 17.2 and 15.9 days, respectively. These results showed that 6% turmeric cream exhibited mild irritation, which was significantly lower than 20% turmeric cream ($p<0.05$). This study showed that curcuminoids was directly involved in reducing skin irritation. However, further research should be done concerning antifungal activity of turmeric cream in skin diseased patients.