Comparison of Antioxidant and Antimicrobial Activities of Essential Oils from *Hyptis suaveolens* and *Alpinia galanga* Growing in Northern Thailand

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ABSTRACT

The essential oils of Hyptis suaveolens (Labiatae) and Alpinia galanga (Zingiberaceae) obtained by hydrodistillation were compared for their antioxidant potentials and antimicrobial activities on the basis of chemical components of both oils. The antioxidant activity of the essential oils was determined by using two complementary methods: 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay and 2,2'-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) free radical decolorization assay. A good correlation of % inhibition was observed between these two methods. The results obtained indicated that the essential oil of A. galanga possessed stronger antioxidant activity than that of H. suaveolens with the IC_{50} values of 550 and 3721 μg/ml, respectively. The antimicrobial activity of the essential oils was compared by the dilution method. The results showed that the essential oil of A. galanga was more active against the test microorganisms with the MID values of 1:320, 1:320, 1:160, 1:80, 1:80, 1:160 and 1:160 against Staphylococcus aureus, Streptococcus suis, Erysipelothrix rhusiopathiac, Pseudomonas aeruginosa, Escherichia coli, Pasteurella multocida and Actinomyces pyogenes, respectively. The higher potential in antioxidant and antimicrobial activities of A. galanga oil was supposed to be due to the composition of certain main constituents e.g., 1,8-cineole, 4-allyphenyl acetate and β-bisabolene within the essential oil.

Key words: Essential oil, Antioxidant activity, Antimicrobial activity

INTRODUCTION

It is well-known that free radicals and other reactive oxygen species formed in living cells play an important role in the origin of life and biological evolution (Lander, 1997; Mc Cord, 2000; Zheng and Storz, 2000). However, it has been found that those reactive species also play a cardinal role in oxidative damage to cellular compartment which leads to cell injury and death. This has been associated with pathogenesis of various chronic diseases, e.g., carcinogenesis, coronary heart disease and many other health problems related to advancing age (Cadenas and Davies, 2000; Marnett, 2000; Uchida, 2000). Thus, to increase the antioxidant intake in