Studies on Antimicrobial Activity of Plant Essential Oil in Air

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ABSTRACT

The object of this study was investigate the effect of commercial plant essential oils on the anti-microbial activity in air by using the lamp fumigator with spread medium of water (H2O), 50% and 100% ethanol alcohol (EtOH). The effect of the fumigating time (FT) and stop-fumigating time (SFT) of essential oils on the activity in air was also studied. The anti-microbial activity in air was markedly increased by the increase of the FT whenever any kind of spread medium was used, but decreased by the increase of the SFT. After the SFT of 120 min, there was no significant difference and no inhibition effect of microbial growth between in the spread media without and with the essential oils. The suitable essential oils for the high effect on anti-microbial activity was 6% cinnamon oil with H2O-spread-medium through the 90 min FT. The inhibition time was prolonged for 3 days, compared with that of the medium without any oils. The microbial growth was totally inhibited by using 6% cinnamon oil in H2O perfumed in air for the FT of 120 min. For the two kinds of the low and middle frequency essential oils with the low and middle molecular mass and evaporation rate, respectively, the inhibition effects were much better than those of the high frequency oils with the high molecular mass and evaporation rate when the spread media were H2O and 50% EtOH except for 100% EtOH. The FT for the starting time of the inhibition effect was at least 60 min for the low and middle frequency oils, while that was only 30 min for the high frequency oils. Moreover, the SFT for the starting time of the microbial regeneration was at least 120 min for the low and middle frequency oils, while that was least 60 min for the high frequency oils.

Keywords : Plant essential oil, Anti-microbial activity, Fumigating.

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REFERENCES

李靖芳譯（2000）芳香療法大百科。世茂，台北新店，pp.34-36。 施沛琳（1998）實用芳香療法。聯經，台北市，pp.93-176。 陳明造(2003) 肉品加工上使用的食品添加物 (II)-天然抗氧化劑。食品資訊，第194期。 張上鎮，陳品方（2000）精油之抗菌與抗真菌活性。林產工業，19（2）:275-284。吳昭祥（1999）植物與人生~談植物精油與芳香療法。科學農業，47（1,2）:91-96。 曹志安（2001）檜木精油之抗菌活性研究。大葉大學食品工程所碩士論文，台灣彰化。 楊郁如（1999）芳香精油對皮膚的效用。安寧療護雜誌第十三期。 蔡東湖，馬克麗，陳介甫（1997）芳香療法。J Chin Med 8(1):23-32。 羅伯．滴莎蘭德(Robert Tisserand)著；林榆譯(2001)芳香療法的藝術

，世茂，台北市新店市。 Aoyama, M. and S. Doi. (1992) Antifungal activities of wood extractives of todomatsu, Abies sachalinensis Mastters, against pathogenic fungi causing turfgrass diseases. Mokuzai Gakkaishi 38(1):101-105. Bullerman, L. B., F. Y. Lieu, and S. A. Sejer. (1977) Inhibition of growth and aflatoxin production by cinnamon and clove oils. Cinnamic aldehyde and eugenol. Journal of Food Science 43(4):1107-1109. Gill, A. O., Delaquis, P., Russo, P.,& Holley, R. A.(2002). Evaluation of antilisterial action of cilantro oil on vacuum packed ham. International Journal of Food Microbiology ,73, 83-92. Hitokoto, H., S. Morozumi, T. Wauke, S. Sakai, and H. Kurata. (1980) Inhibitory effects of spices on growth and toxin production of toxigenic fungi. Isman, M. B., (2000). Plant essential oils for pest and disease management. Crop Protection ,19, 603-608. Pascal, J. D. K. Stanich, B, Girard, G. Mazza, (2002). Antimicroial activity of individual and mixed fractions of dill, cilantro, coriander and eucalyptus essential oils. International Journal of Microbiology ,74,101-109 Shieh, J. C. and M. Sumimoto. (1992) Antifungal wood component of Cunninghamia janceolata. Mokuzai Gakkaishi 38(5):482-489. Yatagai, M., T. Sato, Y. Yamaguchi, and T. Takahashi. (1984) Components of Chamaecyparis fossil wood having activity against Streptococcus mutans RIMD 3125001. Mokuzai Gakkaishi 30(3):240-243. Yoneyama, S., I. Togashi, H. Oikawa, and M. Aoyama. (1990) An antifungal substance in the volatile wood-oil of todomatsu, Abies sachlinensis Mast. Mokuzai Gakkaishi 36(9):777-780.