

## Mite-control of active constituent isolated in *Chamaecyparis obtusa* against *Dermatophagoides farinae* and *D. pteronyssinus*

Bo-Kyung Sung, Hoi-Seon Lee

Faculty of Biotechnology and Research Center for Industrial Development of Biofood Materials,  
College of Agriculture & Life Science, Chonbuk National University, Chonju 561-756, Korea  
TEL: +82-63-270-2544, FAX: +82-63-270-2550

The mite-control activities of materials derived from *Chamaecyparis obtusa* leaves against *Dermatophagoides farinae* and *D. pteronyssinus* were examined using the dry film method and compared with that of the commercial benzyl benzoate and *N,N*-diethyl-*m*-toluamide (DEET).<sup>1-5)</sup> The active constituent of the *C. obtusa* leaves was identified as  $\beta$ -thujaplicin ( $C_{10}H_{12}O_2$ ) by spectroscopic analyses. Responses varied with dose. On the basis of a 24 h LD<sub>50</sub> value, mite-control activity against *D. farinae* was more pronounced with  $\beta$ -thujaplicin (72.2 mg/m<sup>2</sup>) than benzyl benzoate (89.9 mg/m<sup>2</sup>) and DEET (377 mg/m<sup>2</sup>). mite-control activity against *D. pteronyssinus* was more pronounced in  $\beta$ -thujaplicin (62.1 mg/m<sup>2</sup>) than benzyl benzoate (72.4 mg/m<sup>2</sup>) and DEET (193 mg/m<sup>2</sup>). These results indicate that mite-control activity of *C. obtusa* leaves likely results from by  $\beta$ -thujaplicin.  $\beta$ -Thujaplicin merits further study as potential house dust mite control agents or as lead compounds.<sup>6-9)</sup>

### References

- [1] Mumcuoglu, K. Y., Z. Gat, T. Horowitz, J. Miller, R. B. Tana, A. B. Zvi, and Y. Naparstek (1999) Abundance of house dust mites in relation to climate in contrasting agricultural settlements in Israel. *Med. Vet. Entomol.* 13: 252-258.
- [2] Lind, P. (1985) Purification and partial characterization of two major allergens from the house dust mite *Dermatophagoides pteronyssinus*. *J. Allergy Clin Immunol.* 76: 753-761.
- [3] Platts-Mills, T. A. E. and A. L. De Weck (1989) Dust mite allergens and asthma a worldwide problem. *J. Allergy Clin Immunol.* 83: 416-427.

- [4] Arlian, L. G. (1989) Biology and ecology of house dust mites, *Dermatophagoides* spp. and *Euroglyphus* spp. *Immunol. Allergy Clin. N. Am.* 9: 339-356.
- [5] Hayes, W. J. Jr., and E. R. Jr. Laws (1991) *Handbook of Pesticide Toxicology*. Academic San Diego, CA, USA, Vol. 1.
- [6] Pollart S. M., M. D. Chapman, and T. A. E. Platts-Mills (1987) House dust sensitivity and environmental control. *Prim. Care.* 14: 591-603.
- [7] Hong, C. H., C. S. Kim, N. K. Kim, and Y. H. Kim (2001) Composition of essential oils from the leaves and the fruits of *Chamaecyparis obtusa* and *Chamaecyparis pisifera*. *J. Korean Soc. Agric. Chem. Biotechnol.* 44: 116-121.
- [8] Miyazaki, Y., M. Yatagai, and M. Takaoka (1989) Effect of essential oils on the activity of house dust mite. *Jpn. J. Biometeorol.* 26: 105-108.
- [9] Furuno, T., Y. Terdad, S. Yano, T. Uehara, and S. Jodai (1994) Activities of leaf oils and their components from Lauraceae trees against house dust mite. *Mokuzai Gakkaishi* 40: 78-87.