Title Inhibitory effect of essential oils from medicinal plants on post-harvest fungal diseases of citrus fruit

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Abstract

The consequence of misuse of chemical biocides in controlling pest and disease has drawn the attention of policy makers to promote the development of natural compounds to prevent decay and insect attack. One of the new and safe methods of controlling pest and disease is use of essential oils from medicinal plants. In the present investigation, inhibition of radial growth and spore germination of important post-harvest fungi (*Penicillium italicum, Penicillium digitatum and Alternaria citri*) exposed to different concentrations essential oils from some medicinal plants (*Thymus vulgaris, Mentha piperita, Satureja hortensis, Cuminum cyminum and Trachyspermum copticum*) were studied. Essential oils were applied at 250, 500 and 1000 ppm and compared to control (without any treatments). Radial growth of *P. italicum* was completely inhibited by *Th. vulgaris* (500 ppm), *S. hortensis* and *T. copticum* (1000 ppm). Radial growth of *P. italicum* exposed to *C. cyminum* and *M. piperita* essential oils (1000ppm) decreased (57.17% and 36.8% respectively). Radial growth of *P. digitatum* was completely inhibited by *Th. vulgaris*, *T. copticum* (500ppm) and *S. hortensis* (1000ppm). Radial growth of *P. digitatum* exposed to essential oils of *C. cyminum* and *M. piperita* decreased 22.8% and 12.15%, respectively. *A. citri* radial growth was completely inhibited by *Th. vulgaris* (250ppm). *T. copticum* and *S. hortensis* (500ppm), *C. cyminum* (1000 ppm). *M. piperita* essential oils (1000 ppm) decreased radial growth of *A. citri* by 59.44%. Therefore the increasing inhibitory effect of essential oils on post-harvest diseases of citrus fruit was *Th. vulgaris*> *T. copticum*> *S. hortensis*> *C. cyminum*> *M. piperita* and the extent of inhibition of fungal growth was dependent on concentration of essential oils used.