

Kanokporn Phoonpool 2012: Inhibition of Fungal Growth and Aflatoxin Production in Peanuts (*Arachis hypogaea* L.) by Herb Extracts. Master of Science (Biotechnology), Major Field: Biotechnology, Department of Biotechnology. Thesis Advisor: Associate Professor Penkhae Wanchaitanawong, Ph.D. 111 pages.

The objective of the present study was to investigate the antifungal activity of 10 Thai herb extracts (clove, ginger, citronella, black pepper, betel, golden shower, gambir, mulberry and cinnamon) against *Aspergillus flavus* TISTR 3366 and *A. parasiticus* TISTR 3276 using agar well diffusion method. Effect of various solvents (hexane, chloroform, ethanol and water) on the antifungal activity was also evaluated. Results showed that all crude extracts of the plants demonstrated ability to inhibit the fungal growth and their efficacy depended on type of herb and solvent used. At concentration 4000 ppm, clove extracts (chloroform and ethanol), betel extracts (hexane, chloroform, ethanol and water), golden shower extract (water) and mulberry extract (water) could completely inhibit growth of tested fungi. Furthermore, hexane extract of clove was found to have the highest antifungal activity against test fungi with minimum fungicidal concentration (MFC) of 250 ppm followed by ethanol and water extracts of betel (1000 ppm), ethanol extract of clove, hexane and chloroform extracts of betel, water extract of golden shower (4000 ppm), respectively. While, water extract of mulberry could completely inhibit against only *A. flavus* TISTR 3366 (4000 ppm). In addition, the efficacy of 8 herb extracts for fungal growth and aflatoxin production in peanut were also studied. It was found that all herb extracts could inhibit growth of the fungi and aflatoxin production which was closed to sythetic chemical (captafol and carbendazim). Aflatoxin production was 4.88–12.66 ppb during 32 days storage. Moreover, these herb extracts could control fungal growth and aflatoxin production in peanut powder product, especially, ethanol extract of clove and betel, chloroform extract of betel and water extract of golden shower. The level of aflatoxin of 18.98–19.89 ppb in peanut powder product was observed for 96 days storage, which was lower than standard level (20 ppb).

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Thesis Advisor's signature