

Teera Watcharamongkol 2011: Bioactivities and Phytochemistry of Rice Straw Extract on Some Weeds and Crops. Master of Science (Botany), Major Field: Botany, Department of Botany. Thesis Advisor: Associate Professor Srisom Suwanwong, Ph.D. 141 pages.

Rice straw extracted by hexane, ethyl acetate, methanol and water were tested on seed germination, seedling growth and lipid peroxidation which used malondialdehyde (MDA) as an indicator. The result showed that rice straw extracted by hexane enhanced seed germination of giant mimosa (*Mimosa pigra* L.) crabgrass (*Digitaria ciliaris* (Retz.) Koeler) and rice (*Oryza sativa* L. cv. KDML 105). Seedling growth of tested plant demonstrated that hexane extract increased root length of giant mimosa, chinese cabbage (*Brassica rapa* L. var. *pekinensis*) and rice. It was also found that methanolic and aqueous extracts increased shoot length of chinese cabbage and root length of crabgrass. While hexane extracts decreased shoot length of crabgrass. Besides this, methanolic extracts decreased shoot and root length of giant mimosa. The study on lipid peroxidation showed that methanolic and aqueous extracts reduced lipid peroxidation in root and shoot of crabgrass, respectively but aqueous extract induced lipid peroxidation in chinese cabbage. Then methanolic extracts, that inhibited giant mimosa seedling growth, were separated by Vacuum Liquid Chromatographic technique, six fractions were received and the fractions were tested back on giant mimosa growth. Fraction 6 that combined among fraction at ratio 0: 65: 35 of hexane: chloroform: methanol to fraction at ratio 0: 0: 100 of hexane: chloroform: methanol gave the best result on inhibition of shoot and root growth while the other fractions enhanced root and shoot length. Fraction 1 which combined hexane: chloroform: methanol fraction at the ratio of 95: 5: 0 to fraction of hexane: chloroform: methanol at 0: 100: 0 ratio gave the highest increase in shoot length and fraction 2 being hexane: chloroform: methanol fraction at the ratio of 0: 95: 5 promoted highest root length.

Phytochemical screening of rice straw extract had been done by using Thin Layer Chromatographic technique. Steroids, terpenoids and phenolic compounds could be detected. Moreover, methanolic and water extracts had shown a spot of coumarins. Therefore, bioactive compounds in rice straw extracts may comprise of steroids, terpenoids and phenolic compounds.

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Thesis Advisor's signature