Siriphan Sukkhaeng 2009: Effects of Crude Extract from Cyanobacterium *Hapalosiphon* sp. on Lipid Peroxidation, Ammonia Assimilation and Photosynthetic Pigment Content in Some Plants. Master of Science (Botany), Major Field: Botany, Department of Botany. Thesis Advisor: Associate Professor Srisom Suwanwong, Ph.D. 100 pages.

The effects of aqueous crude extract from cyanobacteria (*Hapalosiphon* sp.) on some physiological processes in 4 plant species *i.e.* feather pennisetum (*Pennisetum polystachyon* Schult.), giant mimosa (*Mimosa pigra* L.), soybean (*Glycine max* L.) and rice (*Oryza sativa* L. cv. Khao Dawk Mali 105) at seedling stage were investigated. The crude extract at the concentration 0, 75, 125 and 175 g(DW)/l were sprayed 3 times onto the plants. Malondialdehyde (MDA) content as an indicator of lipid peroxidation, ammonia accumulation and photosynthetic pigments (*i.e.* chlorophyll a, chlorophyll b and carotenoids) content were determined. The results showed that the crude extract from *Hapalosiphon* sp. enhanced lipid peroxidation in feather pennisetum and giant mimosa leaves and had more effect on giant mimosa. On the other hand, the crude extract had no effect in roots of all selected plant species. In addition, the crude extract affected on ammonia assimilation by increasing ammonia content in feather pennisetum leaves, soybean leaves and rice roots and the increasing of ammonia content in feather pennisetum leaves was the highest one. The crude extract also decreased chlorophyll a content in giant mimosa but had no effect on chlorophyll b and carotenoids content. These indicated that the effects of *Hapalosiphon* sp. crude extract on physiological processes were different in each plants and the main mode of action of *Hapalosiphon* sp. crude extract might be lipid peroxidation.

Long-term stability study of the crude extract was investigated by spraying the crude extract stored at temperatures of 4 and 30 degree celcius for different period of 0, 30 and 60 days onto giant mimosa seedlings and lipid peroxidation was determined. The results showed that storage temperatures and times had no effect on MDA content in both leaves and roots. These indicated that bioactive compounds in the crude extract that caused lipid peroxidation remained stable at least 60 days after extraction when stored at 4 or 30 degree celcius. Hence, *Hapalosiphon* sp. crude extract can be more alternative in natural herbicide development for sustainable agriculture.

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