

<b>Thesis Title</b>	Effect of Mimosine on Copper and Zinc Content of Ocular Tissues
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### ABSTRACT

*Leucaena leucocephala* (Lam.) de Wit or "Kra-Tinn" is regularly consumed by the Thais. The presence of toxic amino acid, mimosine makes people questionable about its safety and health hazard in human. There is a dearth of information regarding the toxic effect of mimosine on the eyes. Therefore, the present study was designed to gain a better understanding of the results of consumption of *Leucaena leucocephala* and / or its mimosine content on human and experimental animals by

1. determining the amount of *L. leucocephala* and its mimosine content that actually consumed by the Thais in fresh or dried leaves (tender shoots), young pods and seeds.

2. determining the dose of mimosine which resulted in the abnormality of the lens / cornea in the eyes of the rats.

3. determining the levels of copper and zinc in plasma and ocular tissues of rats exposed to *L. leucocephala*.

The results showed that human consumption of tender shoots, young pods and mature seeds of *L. leucocephala* were 18.89, 23.36 and 13.06 g/meal. Mimosine content was found highest in tender shoots and oven dried was more concentrate than fresh one. Protein content in tender shoot was 44.75 g/100 g dried weight. Mimosine 250, 500 mg/kg BW(one single dose) via intragastric to Wistar rat, did not show any ocular changes. Rats lost their body weight upon feeding with *L. leucocephala* diet which was a 20% protein diet (5% protein from "Kra-Tinn" and 15% from casein). The mean mimosine consumption during 18 d of experiments in male and female were 562.77 and 624.72 mg/kg BW/day. Male was more susceptible than female rat. The abnormal features developed in the rats upon feeding the diet were: loss of hair, red tear, swollen eyeball, cataract and leg weakness. Hemoglobin, hematocrit and lens weight were decreased when compare to control. Organ weight changes developed in rat fed leucaena diet. Copper and zinc concentration in lens of rat were higher than control, whereas plasma zinc was decreased. The time taking for ocular changes to develop was 18 days. Histological of cornea showed necrosis of surface corneal epithelial lining with acute inflammation. Neovascularization with extravasation of red blood cells of cornea was evident. Lens exhibited mild degeneration with loss of lining lens epithelium. Toxic injury was seen in renal proximal tubules. Chronic consumption of "Kra-Tinn" may cause health hazard rather than one single dose.