Title	: EFFECTS ON PENILE ERECTION, SPERMATOZOA AND TOXICITY STUDY OF *BUTEA SUPERBA ROXB.* (RED KWAAO KHRUEA)
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Abstract

This study aimed to investigate the effects of ethanolic extracts of *Butea superba* Roxb. in increasing intracavernous pressure (ICP); on cavernosal smooth muscle tone in *in vitro*; sperm count and sperm motility; and acute and chronic toxicities. The alcoholic extracts of *B. superba* collected from Phayao and Phrae provinces were primarily investigated for their effects on the ICP. The source of *B. superba* which revealed the maximum effect in increasing the ICP was used in the subsequent studies.

The results show that the extract from Phrae was the most effective in increasing the ICP. The dose-response relationship study revealed a bell-shape curve with the maximum effective dose at 1 mg/kg. The ICP of the control and 1 mg/kg extract-treated animals were 45.3 ± 2.5 and 100.9 ± 14.0 mmHg, respectively. Effects of *B. superba* on cavernosal smooth muscle tone were investigated. The results show that the extracts significantly induced smooth muscle relaxation. Treatment of male rats for 6 months with *B. superba* extract significantly increased sperm concentration and motility. No signs of sperm anomalies and testicular damages were observed.

Acute toxicity study was performed by giving the extract at the dose of 5,000 mg/kg body weight (BW) as a single dose. The results show that there was no mortality

during the first 24 hours and during 14-day follow up. No abnormal signs was observed. Therefore, LD_{50} of *B. superba* was considered as greater than 5,000 mg/kg BW.

To investigate long-term effects, the animals were orally received the extract at the dose of 0.1, 1, or 10 mg/kg BW /day continuously for 6 months. The results show that long-term treatment with the extracts did not cause significant changes in relative organ weights, blood chemistry and organ histology except that 4 from 15 male rats revealed dilated lumen of epididymis. Some of hematological parameters were altered by the treatment with 1 and 10 mg/kg BW but they were not out of the normal ranges.

These results suggest that the alcoholic extract of *B. superba* from Phrae is more effective in increasing ICP than those from Phayao province. The increasing of ICP by *B. superba* extracts is possible explained by relaxing cavernous smooth muscle which allows an increase in the blood flow. The ability to increase sperm count and prolong motility in *in vitro*, as demonstrated in this studies, may contribute to the success of fertilization.