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INSULIN / PANCREATIC ISLETS

SIRIPORN LORDNGERN : THE EFFECTS OF *Curcuma longa* ON
ARSENIC INDUCED ALTERATIONS OF BLOOD GLUCOSE LEVELS. THESIS
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This study used rats that received sodium arsenite (NaAsO_2) 0.05 and 50 ppm in drinking water to determine the subchronic and chronic effects of arsenic on blood glucose levels.

Significant alterations of basal blood glucose levels in both subchronic and chronic arsenic exposure were not detected. However, the enlargement of pancreatic islets (blood glucose regulating glands) was observed in both conditions. The severity of enlargement depended on the dose of arsenic. The insulin content was determined and it was found that the high dose of arsenic (NaAsO_2 50 ppm) had more insulin content in islet cells than the low dose (NaAsO_2 0.05 ppm). *Curcuma longa* preparation available commercially in the market 100 mg/kgBW was orally administered to rats receiving sodium arsenite 0.05 and 50 ppm once daily for 3 months or 6 months. The significant protective effects of *Curcuma longa* in subchronic and chronic arsenic treated rats were not observed. There were no significant differences in basal blood glucose levels between arsenic treated groups and arsenic together with *Curcuma longa* treated groups. The enlargement of pancreatic islets was still observed in both groups. The results suggested that *Curcuma longa* at the dose and duration used did not protect arsenic-induced morphological changes of pancreatic islets. Arsenic content in the blood was also determined by atomic absorption spectrometry at various time intervals for 6 months. It was shown that *Curcuma longa* 100 mg/kgBW/day could significantly reduce arsenic content in the blood of rats treated with low dose of arsenic for 6 months at $p < 0.01$. In this study, treatment with *Curcuma longa* alone at the dose of 100 mg/kgBW/day also induced morphological changes of pancreatic islets. Further study is needed to clarify its possible mechanisms.