

## Acute toxicity and safety assessment of oil palm (*Elaeis guineensis* Jacq.) leaf extract in rats

### ABSTRACT

Catechin-rich oil palm (*Elaeis guineensis*) leaf extract (OPLE) possesses good anti-diabetic, anti-hypertension, antioxidant, organ-protective, cardiovascular properties and other health benefits. Previous sub-chronic daily supplement of 500 mg kg<sup>-1</sup> body weight (bw) for 3 months in rats showed no significant adverse effects. The present investigation was carried out to evaluate the acute toxicity of the OPLE. The acute toxicity study was conducted by administering to the rats a single dose of either 2 or 5 g kg<sup>-1</sup> bw. General behavior, body weights, other adverse effects and mortality were monitored for up to 14 days. Total white blood cells (WBC), lymphocyte, red blood cell (RBC) counts, hemoglobin concentrations and packed cell volume (PCV) were determined at 0, 1, 3, 7 and 14 days. Liver and kidney function markers were monitored and the effects on the essential organs were examined histologically. The no-observed adverse effects (NOAE) were seen in the 2 g dose, while at the 5 g dose, behavioral changes, grooming, tachycardia, heavy breathing and weakness lasted for 2 h. The 5 g dose also caused significant ( $P \leq 0.05$ ) reduction in RBC, hemoglobin and PCV although there was indifference in lymphocyte and WBC counts. Liver function markers and histology showed hepatocyte damage especially at day 7 in the 5 g dose, but there was partial recovery by the 14th day. The kidneys showed no significant changes. There was no death even at the 5 g dose, and the acute toxic injuries appeared reversible because the rats gradually recovered. In view of the NOAE dose of 2 g kg<sup>-1</sup>, the OPLE at the normal dose levels may be considered relatively safe for use.

**Keyword:** *Elaeis guineensis*; Acute toxicity; Hepatotoxicity; Rats