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The new plant *Parinari kerstingii* Engl.: Toxicity studies and anti-inflammatory properties

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Abstract

Ethnopharmacological relevance:

Parinari kerstingii Engl. extract is traditionally used for the treatment of inflammation, bronchopneumonia, feverish pains, and breast cancer. However, there have not been any scientific reports regarding the medicinal properties of this plant, and no experiments have been done to ascertain the safety of the extract.

Aim of the study: The objective of this work was to evaluate the toxicity of *Parinari kerstingii* Engl. extracts as an herbal remedy and to investigate its anti-inflammatory potential *in vivo*.

Materials and methods:

Sprague-Dawley albino male rats were used in these experiments. 100, 300 and 600 mg/kg of body weight doses of *Parinari kerstingii* Engl. water extract (PKWE) were used for a 14 day toxicity study. For the anti-inflammatory studies, the carrageenan-induced paw edema model was used to investigate the effect of four fractions of *Parinari kerstingii* Engl. ethanol extract [petroleum ether (fraction A), ethyl acetate (fraction B), n - butanol (fraction C) and water (fraction D)] on the paw size of rats and to investigate the inhibitory effects of *Parinari kerstingii* Engl. water (PKWE) and *Parinari kerstingii* Engl. ethanol extract (PKEE).

Results:

The administration of 100 mg/kg and 300 mg/kg of body weight doses of *Parinari kerstingii* Engl. water extract showed no sign of toxicity. However, the 600 mg/kg of body weight dose showed a very significant increase in creatinine concentration. All the fractions of *Parinari kerstingii* Engl. extract demonstrated anti-inflammatory effects, as shown by a significant reduction in carrageenan-induced paw edema and by a significant decrease in the production of IL-1, TNF-α, COX-2, NF-κB, and PGE_2. Moreover, fraction A and B showed enhanced *in vivo* anti-inflammatory effects compared to aspirin. Furthermore, PKEE was demonstrated to be more effective than PKWE.

Conclusion:

We present the first report on the plant *Parinari kerstingii* Engl. Based on our findings, PKWE at a dose of up to 300 mg/kg of body weight for 14 days is considered safe, and our anti-inflammatory results support its traditional use. Overall, *Parinari kerstingii* Engl. has been demonstrated to be a potential drug candidate. Thus, further experiments, such as isolation/structural elucidation of the phytochemicals and biological screening of this plant, need to be done.