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## 高尿酸血症に対する Chatuphalatika の薬理効果

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**OBJECTIVE:** Chatuphalatika (CTPT), is a Thai herbal formulation mixture of Phyllanthus emblica Linn. (Euphorbiaceae), Terminalia belerica Linn. (Combretaceae), T. chebula and the fruit of T. arjuna (Roxb.) Wight & Arn. This study was designed to investigate the antioxidative, anti-inflammatory and antihyperuricemic effects of CTPT for the first time.

**MATERIALS AND METHODS:** Antioxidant activities of CTPT extracts were measured in vitro by DPPH, ABTS and FRAP assays, and anti-inflammatory effect by measuring inflammatory mediator production induced by lipopolysaccharide (LPS) in RAW264.7 macrophages. The mechanism of the hypouricemic effect was investigated using oxonate-induced hyperuricemic ddY mice treated with oral administrations of CTPT at various doses.

**RESULTS:** Antioxidant activities of CTPT measured by ABTS and FRAP assays were 1.35 g TEAC/g extract and 10.3 mmol/100 g extract, respectively. $IC_{50}$ for the inhibition of DPPH radical was 13.8 μg/mL. CTPT (10 μg/mL) significantly downregulated the mRNA expression of TNF-α and iNOS in RAW 264.7 cells. Lineweaver-Burk analysis of the enzyme kinetics showed that CTPT inhibited xanthine oxidase (XOD) activity in a noncompetitive manner with the $K_i$ of 576.9 μg/mL. Oral administration of CTPT (1000 mg/kg) significantly suppressed uric acid production by inhibiting hepatic XOD activity, and decreased plasma uric acid levels in hyperuricemic mice by approximately 40% ($p < 0.05$).

**CONCLUSIONS:** This study demonstrated for the first time the antioxidative, anti-inflammatory and antihyperuricemic effects of CTPT in vivo and in vitro, suggesting a possibility of using CTPT for the treatment of hyperuricemia in gout.