

## In vitro evaluation of xanthine oxidase inhibitory activity of aqueous extracts of six medicinal plants

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### Abstract

**Background:** Overproduction of uric acid by xanthine oxidase (XO) causes gout. XO inhibitors such as allopurinol, are the most important available anti-gout drugs. Medicinal plants are available natural sources that may be useful for the treatment of gout. **Objective:** In this study, the XO inhibitory activity of aqueous extracts of *Phaseolus vulgaris*, *Cinnamomum zeylanicum*, *Mentha longifolia*, *Cichorium intybus*, *Capparis spinosa* and *Trigonella foenum-graecum* that their anti-gout effects have been reported in the literature, were measured. **Methods:** In these experiments, under controlled conditions xanthine turns into uric acid by XO. Uric acid absorbance was measured at 290 nm using a UV spectrophotometer. Adding allopurinol (as positive control) or aqueous extracts to the solution containing XO, can decrease uric acid production by inhibition of this enzyme. At first, XO inhibitory activity of allopurinol and reproducibility of the method were evaluated by conducting three experiments. After that, the XO inhibitory activity of aqueous extracts at 0.1, 0.5, 1, 1.5, 2 and 3 mg/ml were measured. **Results:** The results showed an  $EC_{50} = 0.38 \mu\text{g/ml}$  for allopurinol. The obtained data showed that *Mentha longifolia* in compare with its control could inhibit enzyme up to 44% ( $p < 0.001$ ) at 3 mg/ml. Maximum XO inhibitory activity of *Phaseolus vulgaris* at 3 mg/ml in compare with its control was 27% ( $p < 0.001$ ). Other extracts did not have any significant effect on XO. **Conclusion:** The results showed that part of the anti-gout effects of *Mentha longifolia* and *Phaseolus vulgaris* is due to XO inhibition.

### Reaxys Database Information

### Author keywords

Aqueous extract; Gout; Medicinal plants; Xanthine oxidase

### Indexed Keywords

**EMTREE drug terms:** allopurinol; antigout agent; *Capparis spinosa* extract; chicory extract; *cinnamomum zeylanicum* extract; fenugreek extract; *Mentha longifolia* extract; *phaseolus vulgaris* extract; plant extract; unclassified drug; uric acid; xanthine oxidase

**EMTREE medical terms:** antigout activity; article; *Capparis*; *capparis spinosa*; chicory; *Cinnamomum zeylanicum*; controlled study; drug activity; drug effect; drug inhibition; fenugreek; in vitro study; *Mentha*; *Mentha longifolia*; nonhuman; *Phaseolus vulgaris*; reproducibility; spectrophotometer; ultraviolet radiation

**Species Index:** *Capparis spinosa*; *Cichorium intybus*; *Cinnamomum verum*; *Mentha longifolia*; *Phaseolus vulgaris*; *Trigonella foenum-graecum*

**Chemicals and CAS Registry Numbers:** allopurinol, 310-30-0; uric acid, 69-93-2; xanthine oxidase, 9002-17-9

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