

Antispasmodic effect of osthole and coumrin rich extract of *Prangos ferulacea* (L.)Lindl.on the rat isolated ileum

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Background and Aims: Osthole is a prenylated coumarin isolated from *Prangos*. *Prangos ferulacea* is a plant found in the Mediterranean and Middle-east regions used as carminative, anti-flatulent, emollient and antibacterial herb. It is believed that the coumarins are responsible for some of known effects of *Prangos*. In this research the relaxant effect of osthole and *Prangos ferulacea* extract was investigated on rat ileum contraction in vitro.

Methods: Strips of ileum were mounted for isotonic recording under 1g tension in Tyrode's solution, maintained at 37°C and gassed with O₂. Relaxant effect of osthole and *Prangos ferulacea* extract were examined on contraction induced by KCl, acetylcholine (ACh) and electrical field stimulation (EFS) and compared with propantheline and nifedipine.

Results: The acetonic extract of *P. ferulacea* concentration-dependently relaxed ileum contraction induced by KCl (IC₅₀= 1.3±0.25 µg/ml), ACh (IC₅₀=7.7±1.1 µg/ml) and EFS (IC₅₀=8.8±1.4 µg/ml). However, the extract at lower concentration (4 µg/ml) potentiated the ACh and EFS responses. Unlike the extract, osthole did not potentiate the ileum contraction but concentration-dependently inhibited ileum contractile responses to KCl (IC₅₀=2.2 ± 0.7 µg/ml), ACh (IC₅₀=2.5±0.7 µg/ml) and EFS (IC₅₀=2.8±0.24 µg/ml). Propantheline concentration dependently inhibited the ileum response to ACh, with IC₅₀ value of 0.61 ± 0.09 nM without affecting the KCl response. As expected, the EFS response was only partially reduced. Nifedipine (0.2-50 nM) inhibited tonic contraction induced by KCl with IC₅₀ value of 2.5 ± 0.8 nM. However, nifedipine only partially inhibited the response to ACh. Nifedipine had a weaker inhibitory effect on the EFS response and at concentration which abolished the response to KCl, the response to EFS was reduced by 33%.

Conclusions: These results confirmed both potentiatory and inhibitory action of *P. ferulacea* extract on rat ileum contractile activity. Osthole is responsible for the inhibitory effect but potentiating components are not yet known.

Keywords: *Prangos ferulacea*; Osthole; Ileum; EFS; ACh; KCl