Gastric Cytoprotective Activity of Ilicic Aldehyde in Rats and Mice

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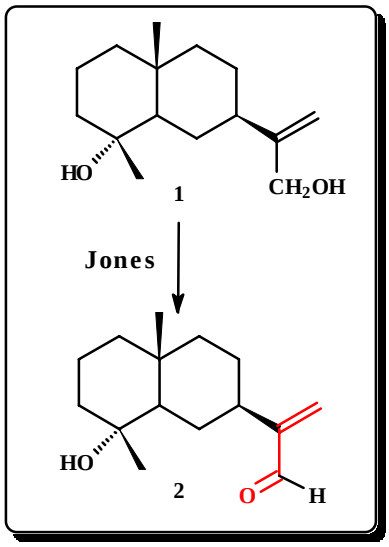
Abstract: Ilicic alcohol, a natural sesquiterpene, was converted into an aldehyde by using Jones' oxidation. The gastroprotective activity of ilicic aldehyde was evaluated in mice and rats.

Introduction



It is well known that gastric cytoprotective activity is closely related to the presence of α,β-unsaturated carbonyl groups [1]. Taking into account this fact, we have studied the activity of ilicic aldehyde. This compound was obtained by oxidation of the corresponding natural alcohol. This work reports the gastroprotective ability against different necrotizing agents (absolute ethanol, NaOH 0.2 N, HCl 0.6 N, NaCl 25%, in rats and absolute ethanol in mice).

Material and Methods

Oxidation

Ilicic alcohol [1], an eudesmane sesquiterpene, isolated from *Fluorensia oolepis* [2] was oxidised with Jones' reagent, by the usual method proposed for allylic alcohols [3]. Through this reaction it was possible to obtain ilicic aldehyde [2].

Pharmacological assays

Wistar rats, were grouped in six lots: 1, 2 y 3: received as necrotizing agent NaOH 0.2 N (*p.o.*) (n=6), HCl 0.6 N (*p.o.*) (n=5) and NaCl 25% (*p.o.*) (n=5), respectively. Lots 4, 5 y 6: were administered with ilicic aldehyde (**2**), 40 mg/kg, 1 ml (*p.o.*, n=5) 60 min before the administration of necrotizing agents, NaOH 0.2 N, HCl 0.6 N and NaCl 25%, respectively. The degree of erosion in the glandular part of the stomach was assessed from a scoring system designed by Marazzi, Uberti and Turba [4]. In another experiment, gastric mucosal damage in Wistar rats was induced by absolute ethanol (EA, 1 ml/rat, *p. o.*) according to Robert *et al.* (1979) [5]. Four experimental groups received **2** (1 ml, 25, 50, 75 and 100 mM). The effective dose, ED_{50}, were obtained with software ALLFIT (De Lean *et al.*, 1988) [6]. In another experiment with Rockland mice, EA was employed as the necrotizing agent (0,1 ml/10 g, *p.o.*), according to the method of Robert *et al.* (1979) [5]. The results were expressed as Ulcer Index (UI) and as the percentage cytoprotection, method by Yamasaki *et al.* (1989) [7]. The statistical significance of difference among means was assessed by analysis of variance (ANOVA) with the multiple comparison method by Tukey, and by Students´s *t*-test.

Results and discussion

The results were expressed as follows (Ulcer Index) :

- In the first experiment: L. 1: 4,80 ± 0,27; L. 2: 4,37 ± 0,25; L. 3: 4,33 ± 0,57; L. 4: 1,50 ± 0,50*; L. 5: 0,83 ± 0,28*; L. 6: 0,75 ± 0,28** (*p<0,00001; **p<0,0001 *vs.* controls. Each value represents the mean ± SEM).
- In the experiment performed to study whether **2** protects the gastric mucosa in rats at different doses: 25 mM: 1,5 ± 0,11; 50 mM: 1,08 ± 0,12; 75 mM: 0,6 ± 0,11; 100 mM: 0,20 ± 0,10. ED_{50} = 21,57 ± 4,22 mM.
- In the evaluation of gastroprotective activity in mice: L. control: 4,75 ± 0,15; L. 0,43 ± 0,11* (91% of cytoprotection) (*p<0,00001 *vs.* control).

These results indicate that **2** prevents the formation of gastric mucosal lesions induced by absolute ethanol and by other necrotizing agents in rats and mice.

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References and Notes

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