ELSEVIER

Fitoterapia 76 (2005) 722–724

FITOTERAPIA

www.elsevier.com/locate/fitote

Short report

Anticonvulsant evaluation of safranal and crocin from *Crocus sativus* in mice

Hossein Hosseinzadeh *, Fatemeh Talebzadeh

Pharmaceutical Research Center, Faculty of Pharmacy, Mashad University of Medical Sciences, Mashhad, Iran

Received 16 January 2005; accepted 21 July 2005
Available online 25 October 2005

Abstract

The anticonvulsant activities of C*rocus sativus* stigma constituents, safranal and crocin, were evaluated in mice using pentylenetetrazole (PTZ)-induced convulsions in mice. Safranal (0.15 and 0.35 ml/kg, i.p.) reduced the seizure duration, delayed the onset of tonic convulsions and protected mice from death. Crocin (200 mg/kg, i.p.) did not show anticonvulsant activity.

Keywords: *Crocus sativus*; Safranal; Crocin; Anticonvulsant

1. Plant

Crocus sativus L. (Iridaceae), commonly known as saffron, is a perennial stemless herb that is widely cultivated in Iran and other countries such as India and Greece. Commercial saffron comprises the dried red stigma with a small portion of the yellowish style attached [1].

2. Previously isolated constituents and reported activities

Safranal, picrocrocin, crocetin and crocin [2]. Saffron extract or its active constituents, crocetin and crocin, could be useful as a treatment for neurodegenerative disorders

* Corresponding author. Fax: +98 5118823251.
E-mail address: hosseinzadehh@mums.ac.ir (H. Hosseinzadeh).

0367-326X/$ - see front matter © 2005 Elsevier B.V. All rights reserved.
doi:10.1016/j.fitote.2005.07.008

Table 1
Effect of safranal on convulsion induced by the pentylenetetrazole in mice

Protection of seizure (%)	Protection of mortality (%)	Duration (s)	Onset (s)	Treatment[a]
0	0	52.29 ± 8.83	47.9 ± 13	Normal saline
71.42	100	3.58 ± 2.6*	699 ± 130*	Diazepam 1.5 mg/kg
0	0	51.16 ± 13	44.7 ± 20.4	Crocin 200 mg/kg
28.58	0	9.14 ± 3.3*	70 ± 19	Safranal 0.15 mg/kg
37.5	62.5	3.87 ± 1.3*	481 ± 131*	Safranal 0.35 mg/kg

$N=8$.
*$P>0.05$ Tukey–Kramer test.
Values presented as the mean ± SEM.
[a] Pentylenetetrazol, 90 mg/kg, was injected i.p. 30 min before treatment.

accompanying memory impairment [3]. Pharmacological studies have been demonstrated that saffron extracts or its constituents have antitumor [4–6] and hypolipidemic effects as well as radical scavenging properties [2]. Antinociceptive and antiinflammatory [7] as well as antidepressant effects have also been reported in animals [8,9] and humans [10]. In traditional medicine, the stigmas of this plant have been used as an anticonvulsant remedy [1] and this effect was showed in mice [11].

3. Studied activity

Anticonvulsant activity in mice was evaluated using the pentylenetetrazole (PTZ; 90 mg/kg i.p.) test. The time taken before the onset of clonic convulsions, duration of clonic convulsions, percentage of seizure and the mortality protection were recorded [12].

4. Results

Reported in Table 1.

5. Conclusions

The present study indicates that safranal has an anticonvulsant activity in PTZ-induced seizures, in mice. On the contrary, crocin seems to be devoid of this activity. Further studies need to show the mechanism(s) of the anticonvulsant activity of safranal.

References

[1] Zargari A. Medicinal plants. Tehran: Tehran University Press; 1990. p. 574.
[2] Ríos JL, Recio MC, Giner RM, Máñez S. Phytother Res 1996;10:189.
[3] Abe K, Saito H. Phytother Res 2000;14:149.
[4] Nair SC, Pannikar B, Panikkar KR. Cancer Lett 1991;57:109.
[5] Escribano J, Alonso GL, Coca-Prados M, Fernandez JA. Cancer Lett 1996;100:23.

[6] Abdullaev FI. Exp Biol Med 2002;227:20.
[7] Hosseinzadeh H, Younesi H. BMC Pharmacol 2002;2:7.
[8] Karimi G, Hosseinzadeh H, Khaleghpanah P. Irn J Basic Med Sci 2001;4:11.
[9] Hosseinzadeh H, Karimi G, Niapour M. Acta Hortic 2004;650:435 (ISHS).
[10] Akhondzadeh S, Fallah-Pour H, Afkham K, Jamshidi A-H, Khalighi-Cigaroudi F. BMC Complemen Alter Med 2004;4:12.
[11] Hosseinzadeh H, Khosravan V. Arch Irn Med 2002;5:44.
[12] Vogel HG, Vogel WH. Drug discovery and evaluation. New York: Springer Publishing; 1997. p. 260.