Original Article

CNS Stimulant Activity of Qurs Saffron (A Herbal Medicine) in Experimental Animal Models

1. Naveed Ullah 2. Mir Azam Khan 3. Huma Waqas 4. Afraseyab Ali Shah 5. Ghayour Ahmed 6. Nouman Altaf

1. Ph.D. Student Pharmacy Dept, University of Malakand 2. Assoc. Prof. of Pharmacy, University of Malakand 3. Asstt. Prof. of Paediatrics, WMC, Abbottabad 4. Lecturer of Pharmacology, FMC Abbottabad 5 & 6 M.Phil Students, Pharmacy Dept, University of Malakand.

ABSTRACT

Objective: To confirm the safety and efficacy of the product for human health due to its wide use and to explore its effects on CNS.

Study Design: Experimental and observational

Place and Duration of Study: This study was conducted at Frontier medical college Abbottabad Pakistan in March 2011.

Materials and Methods: Thirty rabbits divided into five groups were administered Qurs saffron at the dose of 50, 100 and 200 mg/kg, Caffeine 100mg/kg orally and the last group was taken as control group, received normosaline. The animals were observed for behavioral changes at 30 min intervals.

Results: At 50mg/kg of the drug were found to have mild stimulant activity, while 100mg/kg were found to have a moderate CNS stimulant properties same like caffeine at a dose of 50mg/kg. While at a dose of 200mg/kg Qurs saffron were found to have a strong stimulant properties.

Conclusion: From the current study it can be concluded that the product have dose dependent CNS stimulant effects.

Key Words: Qurs saffron, Caffeine, CNS stimulant effects.

INTRODUCTION

Nature has been a source of medicinal agents and a large number of drugs are isolated from natural sources. Medicinal plants have a great value in the field of health. From the very past the use of herbal medicine have been very important, and fulfills the primary health care needs of about 80% of the world population[1].

Qurs saffron (herbal tablets) is used as an analgesic for the treatment of all body pain, especially it is prescribed for the treatment of arthritis. It claimed to have the following plant extracts. I.e. Meadow saffron, Colchicum, Murdannia, Asparagus, Pellittory, China root, Mace, Dill, Peppermint, Fennel fruit, Horse radish, Kala dana, Black pepper, Long pepper and Coral.

Colchicum autumnale (meadow saffron), are well known, preparations traditionally used as medication against gout[2]. Asparagus officinalis is a spring vegetable, a flowering perennial[3], plant species in the genus Asparagus, eaten raw as a component of a salad. Dill (Anethum graveolens) is a short-lived perennial herb. In Arabic, dill seed is called ain jaradeh (means cricket eye) used as a spice in cold dishes like fattosh and pickles. In Lao cuisine and parts of northern Thailand and Vietnam, dill is known in English as Laotian coriander[4]. Horseradish (Armoracia rusticana, syn. Cochlearia armoracia) is a perennial plant of the Brassicaceae family, Known to have diuretic properties, the roots have been used to treat various minor health problems, including urinary tract infections, bronchitis, sinus congestion, in-growing toe nails and coughs. Compounds found in horseradish have been found to kill some bacterial strains[5]. Peppermint has promising radio protective effects for cancer patients undergoing cancer treatment[6]. Peppermint oil has a high concentration of natural pesticides, mainly menthone[7]. Saffron is a spice derived from the flower of the saffron crocus (Crocus sativus). Crocus is a genus in the family Iridaceae. Saffron has many medicinal uses[8]. A 2010 double-blind, placebo-controlled study found saffron helped mild to moderate Alzheimer's disease[9]. Crocetin, an important carotenoid constituent of saffron, has shown significant potential as an anti-tumor agent in animal models and cell culture systems[10].

As arthritis is a most common disease in the old age, and most of the people believed that, herbal medicine have a great effect in this disease, rather than allopathic medicines. Qurs saffron tablets (herbal product) widely used for the treatment of gout and other body pain. And an observation from the users that the drug has alertness properties, therefore the current study was designed with a view to confirm and explore the CNS stimulant activity of the product.

MATERIALS AND METHODS

Drug Material

The fresh formulated drug (Qurs saffron) was purchased from local market of Taxila Pakistan. The specimen pack, marked with a number 1821 has been deposited in Pharmacology Museum, Frontier Medical College Abbottabad Pakistan.

Preparation for tests

Isotonic solution of Qurs saffron tablets and Caffeine tablets were prepared by dissolving in sufficient quantity of normo-saline to prepare 50mg/ml, 100mg/ml, and 200mg/ml of Qurs saffron and 100mg/ml of Caffeine.

Experimental Animals

Rabbits of either sex were breed locally. Their average weight was in the range of 1.5 – 2.0 kg. They were maintained at the "Animal House of Frontier Medical College Abbottabad" as per Byelaws of Scientific Procedures. Animals were given free access to standard diet along with fresh water.

Experimental Protocol

Evaluation of general behavioral profiles was performed by the method of Dixit and Varma[11]. Thirty rabbits of either sex were taken and divided into five groups. Each group contained six animals. Qurs saffron was administered to the first three groups of animals at the dose of 50, 100 and 200 mg/kg orally. One group was administered Caffeine 100mg/kg orally and the last group was taken as control group, received normosaline in the same amount as that to the others.

The animals were under observation for their behavioral changes, if any, at 30 min intervals in the first one hour and at the hourly intervals for the next 4 hour for the following parameters. The alertness was recorded by visual measure of the animal's response. The normal behavior at resting position was scored as;

No activity (-)
Little activity (+)
Moderate activity (+ +)
Strong response (+ + +)

RESULTS

The qualitative CNS stimulant activity of Qurs saffron revealed that, this herbal drug has a strong stimulant effect on central nervous system, and was found to be dose dependant. Further their stimulant effect was compared with caffeine, which was found to be approximately same as that of caffeine as given in table 1. *Qurs saffron* at a dose of 50mg/kg were found to have mild CNS stimulant activity, while caffeine at a dose of 50mg/kg showed moderate stimulant effect. A moderate CNS stimulant effect were also noted at a dose of 100mg/kg of Qurs saffron, and this effect were found so severe in the experimental animals that were administered with a dose of 200mg/kg of this particular drug.

Table No.1: CNS stimulant effect of Qurs saffron

Type of Extract	Quantity & Extant of alertness and Visual behavioral changes in Animals No.						
	1	2	3	4	5	6	Cumulative
***Qurs saffron* 50 mg/kg**	+	+	++	+	+	+	+
***Qurs saffron* 100mg/kg**	++	++	++	++	++	++	++
***Qurs saffron* 200mg/kg**	++	+++	+++	+++	++	+++	+++
Caffeine 50mg/kg	+++	++	++	++	++	+++	++
Isotonic solution	-	-	-	-	-	-	-

+++ excess (Present) ++ Moderate (present)
+ Mild (present)- Absent

DISCUSSION

Group-1 received Qurs saffron at a dose of 50mg/kg showed a mild CNS stimulant activity. Group-2 received Qurs saffron at a dose of 100mg/kg showed a moderate stimulant activity. Group-3 received Qurs saffron at a dose of 200mg/kg showed a strong CNS stimulant activity. Group-4 received Caffeine at a dose of 50mg/kg showed a moderate CNS stimulant activity. Group-5 received only normosaline did not show a measurable CNS stimulant activity.

As Qurs saffron *claimed* to have the following plant extracts. I.e. Meadow saffron, Colchicum, Murdannia, Asparagus, Pellittory, China root, Mace, Dill, Peppermint, Fennel fruit, Horse radish, Kala dana, Black pepper, Long pepper and Coral.

Maclagan reviewed the published experience with colchicum, which is also present in this particular drug; he described his own clinical studies[12]. He found colchicum useful as a diuretic in dropsy following scarlet fever, especially when the urine was suppressed and signs of coma were present. He recommended colchicum as an anti-inflammatory drug in acute gout, in acute articular rheumatism, and in urticaria**.** Maughan and Griffin reported that Caffeine has diuretic properties when administered in sufficient doses to subjects who do not have a tolerance for it[8]. So both the drugs were reported to have diuretic properties.

Haden, in 1820 published a monograph on the use of colchicum as a general remedy in the treatment of acute and chronic inflammatory diseases[13]. His father has begun the use of colchicum in gout after want's report he extended the use of the remedy from gout to rheumatism.

Armstrong considered colchicum a medicine of considerable benefit in inflammatory fever; He recommended it especially in acute or sub-acute rheumatism, and in internal serous inflammation, particularly of the arachnoids or of the pleura for the treatment of dropsy[14].From these it can be concluded that the alkaloids colchicines may be present in excess in the drug which have more potent anti-inflammatory activities responsible for anti-gout effects. And has also had some chemical constituents which have strong CNS stimulant properties like Caffeine etc, and need to a have a quantitative study of the drug.

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Address for Corresponding Author
Dr. Naveed Ullah
Ph.D. Student Pharmacy Dept,
University of Malakand.
Tel: 0092-992-511020
Cell: 0092-345-5910522
E-mail: naveedjia@yahoo.com
naveedullahpharmacist@gmail.com