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Study of pharmacokinetics and pharmacodynamics of *Crocus sativus*

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Abstract

Crocus sativus L. (saffron), widely cultivated in Iran, India, and Greece, is a medicinal plant with over 150 bioactive compounds, including picrocrocin and safranal, responsible for its bitter taste and aroma. It exhibits diverse pharmacological activities such as antihypertensive, anticonvulsant, antioxidant, antidepressant, anti-nociceptive, and anti-inflammatory effects, along with memory-enhancing and circulatory benefits. In this study, 30 cases were assessed using random sampling and detailed case histories. Results showed marked improvement in 20 patients (67%), no significant improvement in 6 (20%), and no improvement in 4 (13%). Findings suggest *Crocus sativus* has a promising scope as a homeopathic therapeutic remedy.



Introduction

Crocus sativus L. (Iridaceae), commonly known as saffron, is a perennial, stemless herb cultivated mainly in Iran, India, and Greece. The commercial product consists of dried red stigmas with a portion of style, valued for its contents of crocin, picrocrocin, and safranal, which impart color, taste, and aroma, respectively. Historically, saffron has been used for over 4000 years, documented in Assyrian and Egyptian texts, and is recommended in traditional Persian and Indian medicine for depression, heart ailments, analgesia, and as an aphrodisiac.

Saffron contains more than 150 volatile and non-volatile compounds, including carotenoids (crocin, crocetin), flavonoids, and terpenes. Pharmacological studies have demonstrated diverse activities, including antihypertensive, anticonvulsant, anxiolytic, antitussive, antidepressant, aphrodisiac, relaxant,

cytotoxic against tumor cells, and memory-enhancing effects. It improves ocular blood flow, reduces cholesterol, and shows anti-inflammatory and antinociceptive effects.

Therapeutically, saffron has been used since ancient times for kidney problems, melancholy, liver disorders, and as a cardiac tonic. Beyond medicine, it is valued as a spice, dye, and perfume. In homeopathic literature, *Crocus sativus* is described for mental, hemorrhagic, and choreic conditions with marked alternation of mood and “hopping” sensations in the body. Overall, saffron is a multipurpose herb with significant traditional and modern medicinal relevance.

Crocus sativus (Saffron) is a significant homeopathic remedy known for its strong influence on the **mind, nerves, and circulation**, particularly in conditions involving **sudden mood changes, hysteria, chorea, and**



hemorrhages. Its keynote is rapid alternation of mental and physical states—anger followed by quick repentance, laughter alternating with sadness, hysteria with singing, dancing, kissing, or quarrelsome behavior. Patients often show **excitability, impressionability, and hypersensitivity to music**, which may trigger laughter, weeping, or vivid recollections.

On the physical plane, *Crocus sativus* is especially effective in cases of **dark, stringy, viscid hemorrhages**—whether from the nose, uterus, or rectum. In women, it is useful in **metrorrhagia, threatened abortion, false pregnancy, and hysterical behavior linked with menstrual disorders**, often accompanied by sensations as if something alive is moving in the abdomen or breast. Headaches are throbbing and climacteric, eyes feel smoky with sparks or films, and there may be ciliary neuralgia. Constipation, crawling sensations in the anus, and

obstinate portal congestion are also noted.

Modalities include aggravation from heat, fasting, lying down, and during menses, with relief in the open air and after eating. In essence, *Crocus sativus* suits **hysterical, sensitive individuals with alternating moods and dark, stringy hemorrhages**, blending mental instability with marked circulatory disturbances.

Material and Methods

Study design: Experimental non-control group study design

Study setting: OPD/IPD attached to Hospital of PG Homoeopathic Medical College.

Study population: cases attending Homeopathic OPD

Sample size: 30cases

Sampling technique:- Simple random sampling method

Method of selection of study subjects

Inclusion criteria-



All age groups, both genders.

All social classes

Exclusion criteria

Those require Acute life support, Cancer and malignancy, Immuno-compromised cases, Appropriate Subject Withdrawal Criteria, Irregular follow-ups and medical emergencies.

Operational definitions

Pharmacodynamics is that branch of homeopathic pharmacy that helps us to acquire knowledge about the dynamic actions and effects of drugs on healthy organisms and constitutes the fundamental aspects of homeo-therapeutics. Pharmacokinetics, sometimes described as what the body does to a drug.

Appropriate Methods of Measurements

IMPROVED: Relief of Signs and Symptoms up to the end of my study period will be considered improved.

PARTIALLY IMPROVED:- partial relief of complaints **NOT IMPROVED:** No change in signs and symptoms.

Appropriate Study Instrument /Data Collection tools

Case Taking format, Blood routine, X-ray, & CT scan

Methods of Data collection relevant to the objective

Primary method

Observation

Interview

Questioner Case Study

Secondary method: Literature forms and hard textbooks, reference books, journals and research articles. History forms relationships with people.

Appropriate Data Management & analysis procedure

Data will be managed computerized Excel sheet, charts, and diagrams by using appropriate social science software for statistical methods

Appropriate Data Analysis plan and methods

Collected data will be analyzed by a paired test. Data will be presented in the form of Mean, Standard deviation, Frequency, Percentage and Diagrams

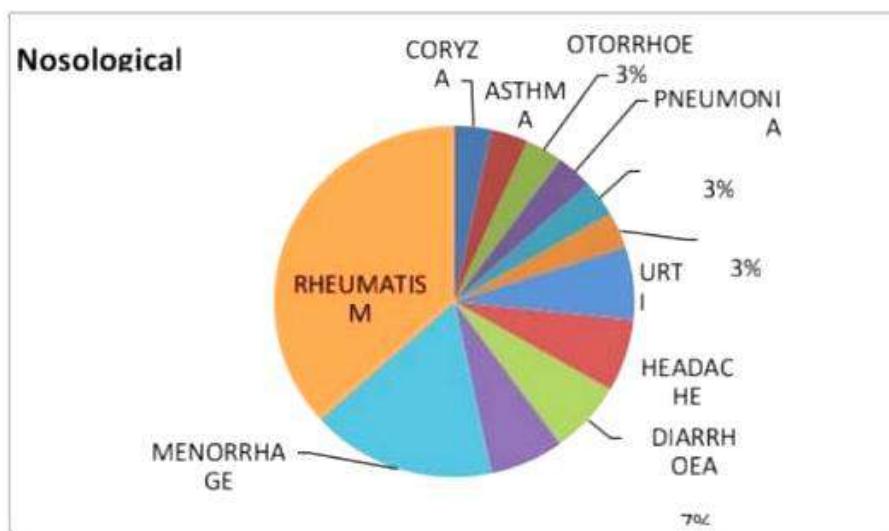


	Additional points for Research in AYUSH	RCT-	Not
Additional points for Research in AYUSH	Not applicable		
Reference to drug/ procedure		Randomization proposed-	Not
Homeopathic drugs prepared according to the British and Indian Homeopathic Pharmacopeia will be followed.		applicable as the study design is a non-control type	
Reference of disease- Not applicable		Allocation concealment proposed- Not	
Drug/Formulation details- Not using any drug formulation, only homeopathic dilution according to the homeopathic pharmacy.		applicable	
Treatment details- Oral homeopathic Medication, diet, exercise and auxiliary measures		Blinding proposed- Single blinding method is adopted	
		Additional points for all Experimental Studies- Not applicable	
		Explained intervention in required details- Plane x-ray, lumbar spine, CT scan & MRI if needed	

Results and Discussion

Table 1: Age distribution of patients

Age group in years	No. Of patients	%
1-10	9	30
11-20	5	16.66
21-30	5	16.66
31-40	4	13.33
41-50	4	13.33
51-60	2	6.66
61-70	1	3.33
TOTAL	30	100



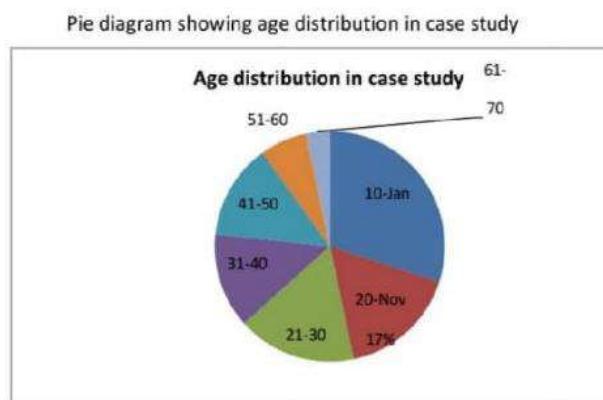
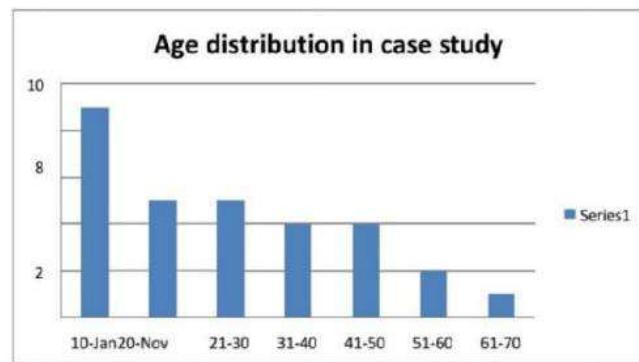


Table A: Gender wise distribution of 30 patients

Sex	No. of Patients	Percentage %
Male	15	50
Female	15	50
Total	30	100

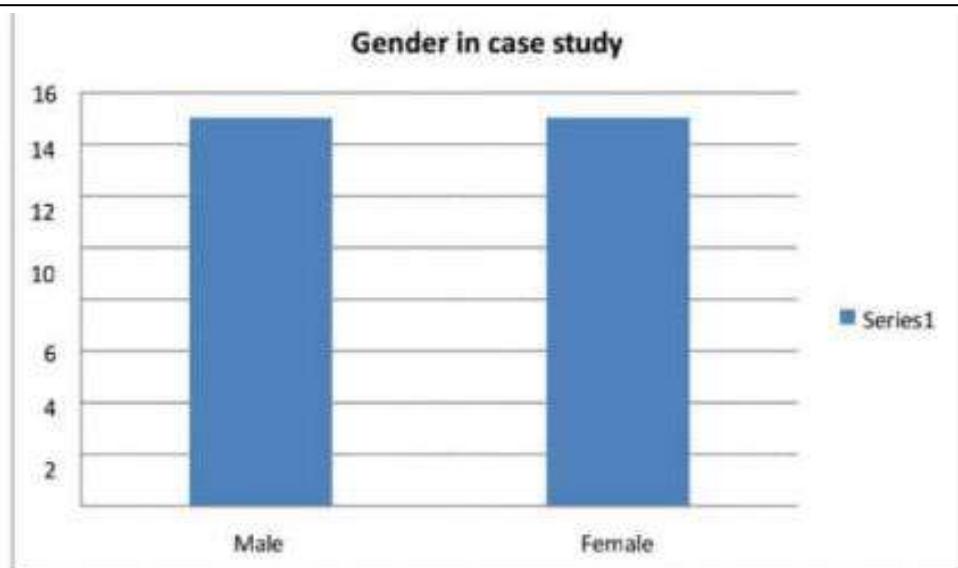


Fig.1. Bar diagram showing gender in the case study

Table-3 RELIGION INCIDENTS

Sl. No.	RELIGION	No. of Patients	Percentage
1.	Hindu	23	77
2.	Muslim	7	23
TOTAL		30	100%

**Table4. RESULT OF STUDY:**

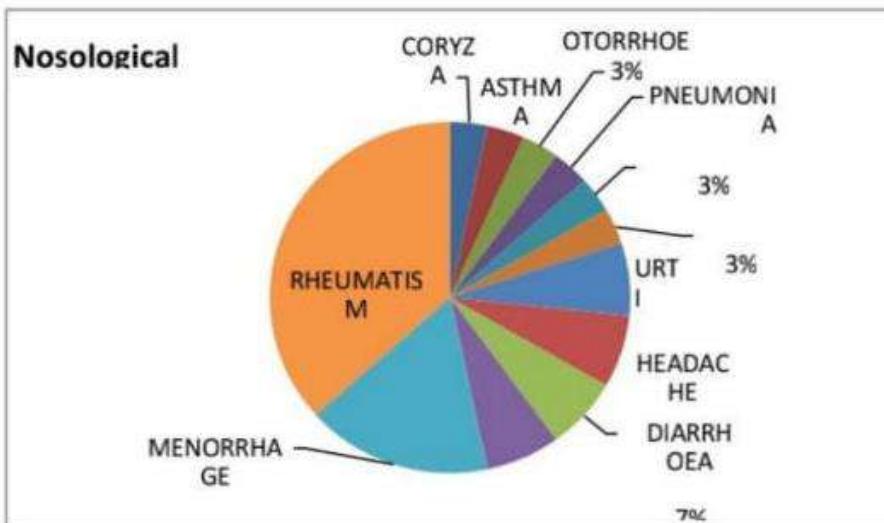
RESULT	NO. OF PATIENTS	PERCENTAGE
IMPROVEMENT	20	67%
PARTIALLY IMPROVEMENT	6	20%
NOT IMPROVED	4	13%
TOTAL	30	100.

Table 5. NOSOLOGICAL DIAGNOSIS-

SR.NO	DISEASES	NOOF CASES	PERCENTAGE
1	CORYZA	1	3%
2	ASTHMA	1	3%
3	OTORRHOEA	1	3%



4	PNEUMONIA	1	3%
5	TOOTHACHE	1	3%
6	WORMS	1	3%
7	URTI	2	7%
8	HEADACHE	2	7%
9	DIARRHOEA	2	7%
10	BRONCHITIS	2	7%
11	MENORRHAGEA	5	17%
12	RHEUMATISM	11	37%



Line diagram showing-

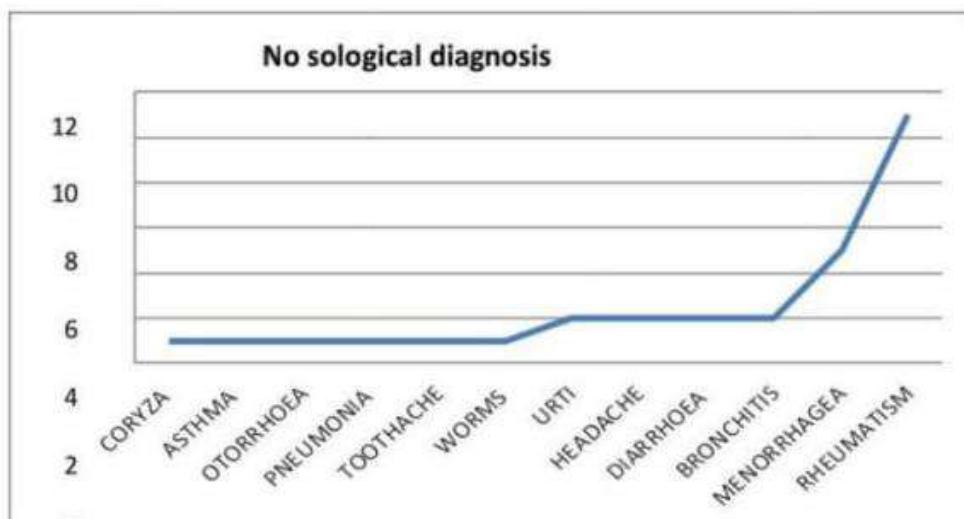




Table 5: showing miasmatic incidence

Miasms	No of cases	Percentage
Tubercular	2	7%
Psora-TB	6	20%
Psora sycosis	15	50%
Psora-Syphilis	1	3%
Syphilis	6	20%
Total	30	100%

It is given when the patient experiences pleasant **mania**; he feels very **happy** and **laughs** all the time, **sings**, and **laughs**. The patient is very **affectionate** at times and other times are very **angry**. There are **sudden changes** from hilarity to melancholy. It is a very good remedy where there is **pulsating pain** in the **head** that worsens **during menses**. There is various **sensations** in the **eyes**. Feeling as if there is an appearance of electric **sparks**. Sensation as if there is **mucus** or **water** in the eyes, must wipe the eyes. The sensation is seen after violent crying. There is a feeling as if she had been looking through

very sharp spectacles. Eyes feel as if in smoke. Lids feel heavy. Pain in the eyes extending to the top of the head. Sensation as if cold air was rushing through the eye. It is given for a patient who has **blood discharge** from the **nose**, which is **dark, stringy**, and **clotted**. Strings of dark blood hanging down the nose. It is a very good remedy for **constipation**, which is generally seen in infants with the feeling of **crawling and stitches in the anus**. There is a feeling as if something is alive in the abdomen. There is a feeling of **heaviness in the abdomen**.

It is a very good female remedy that



covers major problems of females, like **menstrual problems, abortion**. It is given in cases of **threatened abortion**, especially when the hemorrhage is dark and stringy. Menses are dark, too frequent and copious, black and slimy. Females have a uterine **hemorrhage**, which has clots with long strings, which is worse with less movement. It is given in cases where the patient has jerking pain in the interior of the left breast as if drawn towards the back by means of a thread. It is given for respiratory conditions where is a **wheezy cough**, with frothy **expectoration**, containing threads. This cough is worse lying down. The patient has very offensive breath. It is given in cases where the patient has a sudden feeling of **coldness** in the back as if cold water was thrown over him. It is given in cases of **spasmodic contractions** and **twitching** of a single set of muscles. The entire upper extremity falls **asleep**. There is

cracking in the hip joint and knees. It is a very good remedy for weakness in the knees and legs. There is pain in the ankles and soles.

The Symptoms Worsen By

1. Lying down
2. Hot weather
3. Warm room
4. Morning
5. Fasting
6. Before breakfast
7. Movement
8. During pregnancy
9. Puberty

The Symptoms Better By

1. In open-air
2. Yawning
3. Breakfast



Conclusion

The present study on the pharmacokinetics and pharmacodynamics of *Crocus sativus* L. (saffron) demonstrates its significant therapeutic potential, supported by both its rich phytochemical composition and observed clinical outcomes. Among the 30 evaluated cases, 67% showed marked improvement, indicating a substantial pharmacological response to *Crocus sativus*-based treatment. The diverse bioactive constituents—particularly picrocrocin and safranal—likely contribute to its multifaceted effects, including antioxidant, antidepressant, anti-inflammatory, and circulatory benefits. Although a portion of participants exhibited minimal or no response, the overall findings validate saffron's potential as a safe and effective homeopathic

and complementary remedy. Further studies with larger sample sizes, controlled dosing, and long-term follow-up are recommended to establish standardized pharmacological profiles and optimize their clinical applications.

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