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RESEARCH ARTICLE

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***Cinnamomun cassia*, *Ficus carica* and *Fumaria officinalis* possesses aphrodisiac activity in male Wister rats**

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ABSTRACT

Plants possess bioactive constituents which are responsible for their aphrodisiac, antioxidant, inhibitory as well as stimulatory or catalytic properties. The research is aimed at assessing the phytochemical constituents of *Fumaria officinalis* (fumitory), *Cinnamomun cassia* (cinnamon) and *Ficus carica* (bark of fig) with a view to evaluating their aphrodisiac activities. From the results, *C. cassia* has higher saponins content than *F. officinalis* and *F. carica*, while *F. officinalis* was found to contain higher flavonoids than *C. cassia* and *F. carica*. Similarly, *F. carica* contain higher tannins and terpenoids than *F. officinalis* and *C. cassia*. The groups treated with fumitory, cinnamon and bark of fig showed significant increase ($p < 0.05$) in mounting behaviour of 5.00 ± 1.00 & 4.66 ± 1.52 , 3.66 ± 0.57 & 4.33 ± 0.57 and 3.00 ± 1.300 & 2.66 ± 0.57 when compared with the control (1.66 ± 0.57 & 1.33 ± 0.57) within the 1st and the 3rd hour respectively. However, no significant difference ($p > 0.05$) in mounting behaviour was observed within the 1st and 3rd hour across the groups studied. The group treated with the standard drug (Penegra) shows excessive mounting behaviour of 5.66 ± 0.57 & 5.33 ± 0.57 within the 1st and 3rd hour. Our study indicates that bioactive compounds present in these plants may be responsible for their aphrodisiac activities.

Keywords: *Fumaria officinalis*, *Cinnamomun cassia*, *Ficus carica*, aphrodisiac.

INTRODUCTION

An aphrodisiac is a type of food or drink that has the effect of making those who eat or drink it more aroused in a sexual way [1]. Plants, worldwide are used for treatment of many ailments [2] especially in developing countries where resources are meager [3]. Over three-quarter of the world's population is using herbal medicines with an increasing trend globally [4]. Men and women have a long history of making efforts to enhancing their sexual desire by either herbal or orthodox means [4]. Aphrodisiacs act by increasing erectile function, sexual performance and enjoyment [5]. They can be classified by their mode of action into three types, those that can increase libido, potency or sexual pleasure [4].

The use of aphrodisiacs have increased considerably in recent time regardless of whether or not these substances have any scientific basis of truly improving sexual satisfaction irrespective of their composition [6]. *Cinnamomum cassia* has been suggested in Ayurveda for the management of sexual dysfunction [7]. It is one of the most commonly used plant in the food and pharmaceutical industries [8,9]. *Ficus carica* Linn. (Moraceae) is distributed in

all tropical and sub-tropical countries [10]. Traditionally, the plant is being used as aphrodisiac [11-14] and many other therapeutic uses such as antioxidant activities [15], treatment of depression [16], and antimicrobial agents [17].

Fumaria comes from the Latin word *Fumus*, 'smoke', common fumitory has been used medicinally as can be seen from its old Finish name and its scientific species name *officinalis*. The plant is popularly known for its aphrodisiac activity as well diuretic, depurative, purgative, diaphoretic, anti-inflammatory, anti-arrhythmic; urinary, cardiac, digestive disorders [18]. The objective of this work is to evaluate some of the bioactive compounds responsible for the aphrodisiac properties of *Cinnamomun cassia* (Cinnamon), *Ficus carica* (Bark of Fig) and *Fumaria officinolis* (Fummitory).

MATERIALS AND METHODS

Preparation of male rats

The male Wistar rats weighing between 150-200 gm were trained for the sexual behavior like mounting, intromission etc., once a day for a period of 10 days in presence of female rats. A male rat was housed individually in a cage along with two female rats (oestrous phase). Then 15 minutes was allowed as the time required for acclimatization, which was then observed for 1 hour. The males were considered as sexually active only if they attempted to mount the female, when it was introduced into the cage. The male rat which did not show any sexual interest during the test period was considered as inactive male. The sexually active male rats were used for aphrodisiac activity [13].

Preparation of female rats

Female rats were housed in 2 groups with food and water ad libitum. The female rats were brought to the oestrous phase by treating them with oestradiol (10µg/kgb.wt) subcutaneously 48 hours before the observation. Progesterone (1.5mg/kg b.wt) was administered 5 hours prior to experimentation subcutaneously to make the animal sexually acceptable. The female rats which were in oestrous phase were confirmed by observing their vaginal smear [13].

Preparation of Plant Extracts (50%)

The fruits of *Cinnamomun cassia*, *Ficus carica* and *Fumaria officinolis* were collected and dried for 10 days. After drying, the fruits were grind into fine powder. Fifty gram powder of each plant was extracted with 200 ml of distilled water and 200 ml of absolute alcohol (v/v) in a Soxhlet apparatus for 24 hour (8 hours per day for 3 days). The extracts were filtered and the filtrates were evaporated to dryness at low temperature under reduced pressure; thus provided approximately 7.0g for *Ficus carica*, 6.2g for *Cinnamomun cassia* and 4.5 g for *Fumaria officinolis*.

Assessment of Matting Performance

The rats were divided into five (5) groups of 6 each; Group 1 (control) was administered 10ml/kg of distilled water, Group 2, 3 and 4 were administered extract of *Fumaria officinolis*, *Cinnamomuncassia*, and *Ficus carica* of 500mg/kg respectively. Group 5 (standard) was administered *Penegra* 5mg/kg. The drugs were administered in the evening (17:00 - 18:00hrs) and each male was placed in a separate cage. After 1 hour, 2 oestrous females were introduced into each and they were allowed to cohabite over night. The vagina smear of each female rat was examined under a microscope for the presence of sperm cells.

RESULTS AND DISCUSSION

Table 1. Qualitative analysis of *Fumaria officinolis*, *Cinnamomun cassia* and *Ficus carica*

Test	<i>Fumaria officinolis</i>	<i>Cinnamomun cassia</i>	<i>Ficus carica</i>
Saponins	++	+++	++
Flavonoids	++++	+++	++
Alkaloids	++	-	-
Tannins	++	++	+++
Terpenoids	+	+++	++++
Cardial Glycosides	++	+	++
Steroids	++	++	+

Key: - No colour change (absent), + Slight colour change, ++Deep colour change, +++ Very deep colour change, ++++ Total colour change

Table 2: Mounting behaviour in male albino rats

	Group 1	Group 2	Group 3	Group 4	Group 5
1 st Hour	1.66±0.57a	5.00±1.00a	3.66±0.57a	3.00±1.00a	5.66±0.57a
3 rd Hour	1.33±0.57a	4.66±1.52a	4.33±0.57a	2.66±0.57a	5.33±0.57a

Values are expressed as mean ± S.D for four replicates. Values with the same letters in the same column are not significantly different from each other ($p > 0.05$).

Table 1 shows the phytochemical constituent of *Fumaria officinolis*, *Cinnamomun cassia* and *Ficus carica*. *C. cassia* has higher saponins content than *F. officinolis* and *F. carica*, while *F. officinolis* was found to contain higher flavonoids than *C. cassia* and *F. carica*. *F. carica*, on the other hand, contains higher tannins and terpenoids than *F. officinolis* and *C. cassia*. The effects of *Fumaria officinolis*, *Cinnamomun cassia*, *Ficus carica* and Penegra on mounting behaviour of male albino rats were presented in Table 2. The group treated with Fumitory, cinnamon and bark of fig showed significant increase ($p < 0.05$) in mounting behavior of 5.00 ± 1.00 & 4.66 ± 1.52 , 3.66 ± 0.57 & 4.33 ± 0.57 and 3.00 ± 1.00 & 2.66 ± 0.57 when compared with the control (1.66 ± 0.57 & 1.33 ± 0.57) within the 1st and the 3rd hour respectively. However, no significant difference ($p > 0.05$) was observed in mounting behaviour within the 1st and 3rd hour across the groups studied. The group treated with the standard drug (Penegra) shows excessive mounting behavior of 5.66 ± 0.57 & 5.33 ± 0.57 within the 1st and 3rd hour.

Increased in mounting behaviour demonstrated by group 2, 3 and 4 when compared with the control may be attributed to the flavonoids content of the extracts. [7] found that *Cinnamomum cassia* extract was effective in management of sexual dysfunction in aged rats. [19] reported that the potent aphrodisiac activity of *Garcinia kola* seed extract in male albino rats is attributed to its flavonoids contents. [20] confirmed that *Phoenix dactylifera* pollen was found to contain estradiol and flavonoid components that have positive effects on the sperm quality. [21] attributed the aphrodisiac activities of *Fadogia agrestis* (Rubiaceae) stem to the presence of alkaloids and saponins. *Chione venosa* (Rubiaceae) stem bark and the roots revealed three acetophenone derivatives responsible for its aphrodisiac properties [22].

A study conducted by [23] confirmed the claims of *Butea frondosa* (Fabaceae) as an aphrodisiac agent; sexually active and inactive animals showed increased and improved sexual performance. *B. frondosa* skin of the bark and resin contains tannic and gallic acids. [24] showed the presence of alkaloids, flavonoids, coumarins, tannins, volatile oil, sterols and/or triterpenes in *Ruta chalepensis*, from the naturally occurring coumarins, only the 3-phenylcoumarins have been present in *Ruta chalepensis* possessing potent estrogenic activity. [25] indicated that carvacrol and flavonoids are the main constituents of *Satureja khuzestanica* (Lamiaceae) responsible for its aphrodisiac activities. *Lepidium meyenii* (Maca) also contains sterols, such as campesterol, stigmasterol and sitosterol that enhance fertility [26]. *Eurycoma longifolia* Jack enhanced the sexual qualities of the middle aged male rats, its phytochemical screening revealed the presence of alkaloids, lactones and phenolics [27].

Eriosema kraussianum are effective remedies for the treatment of erectile dysfunction and/or impotence due to the presence of pyranoisoflavones (the most active of the compounds had an activity of 75% of that found in Viagra in the erectile dysfunction test on rabbit penile smooth muscle) [28]. [29] extracted total flavonoids from *Palisota hirsuta* leaves, which modified the sexual parameters such as the latent time of observation and the number of tentative of intromission (vaginal penetration) among the male rats.

CONCLUSION

The fruits of *Cinnamomun cassia* (Cinnamon), *Ficus carica* (Bark of Fig) and *Fumaria officinolis* (Fumitory) contained some bioactive compounds in high amounts to effectively enhance sexual activities. Public should utilize these natural plants products in alternative to the orthodox means for driving sexual satisfaction.

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