WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 5, 1511-1519. Research Article ISSN 2277– 7105

ANXIOLYTIC AND ANTICONVULSANT ACTIVITIES OF EXTRACT OF *CARISSA CARANDAS LINN.* LEAVES

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Article Received on
04 March 2021,

Revised on 25 March 2021,
Accepted on 14 April 2021

DOI: 10.20959/wjpr20215-20355

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ABSTRACT

The aim of this analysis was to look into anti-anxiety properties of various Carissa carandas leaf extracts. Leaves of plant were extracted with solvents ranging from petroleum ether (60-80^{o}C), chloroform, ethyl acetate, ethanol, in order of increasing polarity. Using elevated plus maze apparatus; both of rudimentary extracts were tested for anti-anxiety function in mice. Among these extracts, ethyl acetate ethanolic extract demonstrated substantial anti-anxiety effects in mice at 400 mg/kg as compared to regulation normal (diazepam, 4 mg/kg). Ethyl acetate Ethanolic extract increased time spent amount of arm entries in open arms of elevated plus-maze when given at dosage of 400 mg/kg. Since phytochemical screening of ethanolic extract indicated existence of polyphenols, such as flavonoids tannins, these constituents could be responsible for Carissa carandas's anxiolytic capacity. Preliminary photochemical present in petroleum ether, ethyl acetate, ethanol extracts of Carissa carandas leaves were screened using normal methods. Extracts' anticonvulsant potency was calculated using pentylenetetrazole (PTZ) in laboratory animal models with diazepam as control agent; sedative effect was tested using pentobarbitone, which causes sleep in mice. Samples were compared to standard medication

Diazepam for effectiveness. Tentative phytochemical tests indicated existence of alkaloids, glycosides, tannins, and terpins. At dosage of 400 mg/kg, crude extracts of ethanolic, ethyl acetate, petroleum ether were found to substantially reduce extensor stupor, as well as provide protection against PTZ-induced convulsions. At dosage of 100 mg/kg in flexion, petroleum ether, ethyl acetate, ethanolic extract were found to be non-significant. Crude extracts of ethanolic, ethyl acetate, petroleum ether of Carissa carandas leaves were found to extend duration of sodium pentobarbital-induced hypnosis substantially (p 0.05).

KEYWORDS- *Carissa carandas*, anticonvulsant, antianxiety, diazepam.

INTRODUCTION

Carissa carandus Linn. (Karaunda) is widespread herb found in world. Apocynaceae is genus of dogbane. Linn's Carissa carandus. Identified by many names, including cranberry, Bengal currant, Christ thorn This plant's name has recently been changed to Carissa suffocates. Linn's Carissa carandus. has also been found in India, Bangladesh, Malaysia Mayanmar, for example. Linn's Carissa carandus. has been added to Indian pickles contain this element.[1] In past, all aspects of body were considered holy. Plants have been used to cure variety of ailments. Intestinal worms, biliousness, scabies, other parasitic infections stomach. Analgesic, anti-inflammatory, antipyretic, hepatoprotective, anticonvulsant, antihelmenthic, antimalarial, cardiotonic, antiulcer, antidiabetic, antibacterial, antihyperlipidemic, anticancer, antiviral, antifungal, antioxidant activity have all been recorded from this herb. Triterpinoids, flavonoids, carbohydrates, steroids, lignans, saponins, tannins, and alkaloids are contained in phytochemical sampling of plant roots. Saponins have been shown in literature to have important memory-enhancing effect. Since Carissa carandus Linn. includes saponins, new purpose of assessing Carissa carandus Linn, ANXIOLYTIC, Anticonvulsant behaviour is justified.[2, 3] Anxiety is unpleasant sensation of anxiety worry. Anxiety can be classified as anxiety disorder until it becomes excessive.

Anxiety disorders are most prevalent emotional disorders that people suffer from all over world. Anxiety is characterised as feeling of fear, confusion, or tension induced by expectation of real or perceived danger. Anxiety is widespread problem that impacts one-eighth of world's population, with lifetime incidence rates ranging from 13.8 to 28.87 percent in Western countries. Individuals between ages of ten twenty-five are at high risk of experiencing anxiety. Synthetic medications for management of anxiety, depression, seizures, and insomnia are more commonly used than existing anxiolytic drugs such as

benzodiazepines like diazepam, nitrazepam, alprazolam. While these drugs do not completely heal anxiety illness, they do help to alleviate symptoms reduce their frequency.[4, 5]

Since synthetic medicines have number of side effects, natural remedies are also used in many cases of brain disorders. Many medicinal plants are used to treat various alignments in humans, either singly or in combination. Also in today's trends, medical healers use number of medicinal plants to cure multiple forms of alignments illnesses because they have far less side effects than conventional or synthetic medicine. Health healers have been using medicinal plants for years, it is still practised today.[6, 7]

The aim of this research was to assess antianxiety, anticonvulsant, efficacy of different extracts of Carissa carandas leaves in laboratory animal models in order to provide pharmacological support for traditional usage of plant's leaves in treatment of brain diseases.[8]

MATERIAL METHOD (ANXIOLYTIC)

PLANT MATERIAL

Carissa carandas leaves were collected in Parner, Maharashtra, India. Dr. S.Jayanthi, Joint Director, Botanical Survey of India, Pune, described leaves, voucher specimen (CCA01) was stored in herbarium of Botanical Survey of India, Pune.

PREPARATION OF EXTRACTS

Carissa carandas leaves were gathered air dried in shade before being coarsely powdered with mechanical grinder. In soxhlet apparatus, 500gms of powdered materials is uniformly packed. It was then removed with series of nonpolar to polar solvents, including petroleum ether, ethyl acetate, chloroform, ethanol, aqueous.

ANTIANXIETY ACTIVITY

1. ELEVATED PLUS MAZE MODEL

Two open arms (35x5cm) two closed arms (30x5x15cm) project from standard central base in apparatus (5x5cm). closed weapons' base walls are made of wood painted black. entire labyrinth is raised to height of 50 centimetres above ground level. Rats weighing between 150 200 grammes were housed in pairs for ten days before examination in apparatus. To alleviate discomfort, rats were treated by investigator on alternating days during this period. Each rat was positioned in middle of maze facing one of enclosed arms 30 60 minutes after

oral administration of drug therapy. number of entries into open arm time spent in open arm was recorded during five-minute session. operation was carried out in sound-attenuated setting, if necessary.

ANALYTICAL STATISTICS

The data were all presented as means +_S.E.M. One-way ANOVA was used to evaluate results. When ANOVA was important, Dunnette's multiple reference tests was used to allow further distinctions between vehicle opioid recovery categories. P0.05 was selected as statistical significance standard.

MATERIAL METHODS (ANTICONVULSANT)

PLANT MATERIAL

The leaves of plant Carissa carandas were collected in Maharashtra, India, in locations such as Parner. Dr. S. Jayanthi, Joint Director, Botanical Survey of India, Pune, described these leaves of plant Carissa carandas, voucher specimen (CCA01) was held in botanical survey of India's herbarium in Pune.

PREPARATION OF EXTRACTS

The extracts were made by collecting leaves of Carissa carandas vine, air drying them in shade, coarsely powdering them. This was achieved with aid of mechanical grinder. These driven leaves were then collected using series of nonpolar to polar solvents, including petroleum ether, ethyl acetate, chloroform, ethanol, aqueous.

EVALUTION OF ANTICONVULSANT ACTIVITY

Pentylenetetrazole (PTZ) produced convulsions, so albino mice weighing 18-22gm of either sex were used separated into eleven classes. Group I was given placebo was given PTZ 80 mg/kg intraperitonially, while Group II was given diazepam (4 mg/kg i.p.). Groups III, IV, V, VI, VII, VIII, IX, X, XI were given three separate doses (100, 200, 400 mg/kg) of petroleum ether, ethyl acetate, and ethanolic leaves extracts of C.carandas. This was done for seven days in row. PTZ 80 mg/kg intraperitoneally was given to animals on eighth day of treatment. This was done 1 hour after control, normal; extracts were given orally to their respective classes. Each animal in community was observed for 30 minutes at first, then for up to 24 hours. emergence of clonus, flexion, stupor, healing, death, as well as percent defence, was all registered. results are expressed as mean standard deviation (SEM) of six species. ANOVA was included in statistical review, accompanied by Dunnett's t-test to assess importance of

any discrepancies between categories. significance level was set at P0.05. Mice that did not convulse for 30 minutes after being given PTZ are deemed safe.

STASTISCAL ANALYSIS

The data was evaluated statistically using one-way measurement of variance (ANOVA) Dunnett's t test. data was viewed as mean of standard error (SEM). As compared to power, P values of 0.05 0.01 were deemed meaningful.

RESULT (ANXIOLYTIC)

Table 1 indicates effects of phytochemical sampling of Carissa carandas leaf extracts. Since ethyl acetate ethanolic extracts of Carissa carandas leaves at dosage of 400 mg/kg substantially increased time spent arm entries in open arms decreased time spent arm entries in closed arms, behavioural changes caused by Carissa carandas leaves extract in EPM provided anxiolytic impact.

Table 1: Carissa Carandas leaf extracts phytochemical study.

Sr.No.	Phytochemical Constituents	Pet. Ether extract	Ethyl acetate extract	Ethanol extract
1	Steroids	+	+	+
2	Saponins	+	+	+
3	Tannins	+	-	+
4	Alkoloids	+	-	+
5	carbohydrates	-	+	+
6	Proteins	+	+	-
7	Amino acids	-	-	+
8	Flavonoids	-	+	+
9	Diterpenes	-	-	+
10	**Phenols**	-	+	+

Table 2: Carissa carandas leaves have anti-anxiety properties.

Sr. No.	Groups	Treatment	No. of Entries in Open arm	Avg. time spent in open arm in Sec
1	Control	D/W10ml/kg, p.o.	4.50±0.42	8.00±0.36
2	Standard	Diazepam. 4 mg/kg ,i.p	8.33±0.55**	14.83±0.47**
3	PECC	100 mg/kg, p.o.	5.00±0.36ns	7.83±0.30ns
		200 mg/kg, p.o.	6.00±0.36*	9.50±0.42*
		400 mg/kg, p.o.	6.16±0.16**	9.66±0.33*
4	EECC	100 mg/kg, p.o.	4.33±0.33ns	8.00±0.25ns
		200 mg/kg, p.o.	6.33±0.21**	9.66±0.33*
		400 mg/kg, p.o.	6.66±0.33**	9.83±0.30**
5	EECC	100 mg/kg, p.o.	4.83±0.30ns	8.16±0.30ns
		200 mg/kg, p.o.	6.50±0.22**	9.66±0.42*
		400 mg/kg, p.o.	6.83±0.30**	10.00±0.36**

**P0.01 *P0.05, respectively. As compared to regulation using one way ANOVA followed by Dunnette's multiple comparison test, values are Mean SEM, n=6.

RESULT (ANTICONVULSANT)

Phytochemical screening; Table no. 3 displays extracts' preliminary phytochemical investigation. PTZ mediated convulsion; Table 4 reveals that Diazepam treated group has substantial (p0.05) decrease in mean time of tonic hind limb flexion clonus, while control group has tonic hind limb extension stupor. At both doses, there is no substantial difference in mean time of tonic hind limb flexion between Petroleum ether, ethyl acetate, ethanolic extract of Carissa carandas control community. When comparing findings to control, petroleum ether, ethyl acetate, ethanolic extract of Carissa carandas leaves showed decrease in mean time of clonus, stupor, expansion.

Table 3: Carissa Carandas Leaf Extract Phytochemical Analysis.

Sr.No.	Phytochemical Constituents	Pet.ether extract	Ethyl acetate extract	Ethanol extract
1	Steroids	+	+	+
2	Saponins	+	+	+
3	Tannins	+	-	+
4	Alkoloids	+	-	+
5	Carbohydrates	-	+	+
6	Proteins	+	+	-
7	Amino acids	-	-	+
8	Flavonoids	-	+	+
9	Diterpenes	-	-	+
10	**Phenols**	-	+	+

Table 4: shows anticonvulsant activity of extracts in mice with PTZ-induced convulsions.

Group	Groups	Treatment	Time spent in Various phases of convulsion (Sec)					
			Flexion	Extension	Clonus	Stupor	R/D	% Protection
I	Control	D/W10ml/kg, p.o.	5.16±0.30	9.83±0.30	43.83±0.87	182.17±2.94	R	**0**
II	Standard	Diazepam 4 mg/kg ,i.p.	5.16±0.30ns	3.00±0.36**	16.50±0.76**	81.66±2.06**	R	**69.48**
III	Petroleumether extract	100 mg/kg, p.o.	5.66±0.21ns	7.83±0.30**	39.00±1.46ns	137.00±2.88**	R	**20.34**
IV	Petroleumether extract	200 mg/kg, p.o.	6.16±0.30ns	5.66±0.21**	38.16±1.77ns	131.83±2.52**	R	**42.42**
V	Petroleumether extract	400 mg/kg, p.o.	5.33±0.33ns	5.00±0.25**	30.16±2.61**	117.67±2.09**	R	**49.13**
VI	Ethyl acetate extract	100 mg/kg, p.o.	5.83±0.47ns	7.50±0.42**	40.00±1.57ns	140.17±2.12**	R	**23.7**
VII	Ethyl acetate extract	200 mg/kg, p.o.	6.33±0.21ns	6.66±0.33**	33.16±2.52**	127.67±2.04**	R	**32.24**
VIII	Ethyl acetate extract	400mg/kg,p.o.	5.16±0.30ns	5.50±0.42**	29.83±1.99**	116.17±2.71**	R	**44.04**
IX	Ethanol extract	100 mg/kg, p.o.	5.16±0.30ns	7.33±0.33**	42.33±3.20ns	139.00±2.73**	R	**25.43**
X	Ethanolextract	200 mg/kg, p.o.	6.33±0.21ns	6.50±0.42**	33.16±1.62**	127.83±2.12**	R	**33.87**
XI	**Ethanol extract**	**400 mg/kg, p.o.**	**6.00±0.44ns**	**5.16±0.30****	**28.16±0.94****	**118.33±2.63****	**R**	**47.5**

DISCUSSION

When animals are put on EPM, they experience discomfort as result of their fear of height. Reduced muscle function desire to stay in healthy areas is ultimate manifestations of anxiety discomfort in animals. Anxiolytic drugs are thought to improve muscle activity, which is determined by amount of time animal spends in open arms.[9] Carissa carandas ethyl acetate ethanolic extract (400 mg/kg) significantly raised percentage of time spent in open arms by animals. Flavonoid content of ethyl acetate ethanolic extract of Carissa carandas may explain their anxiolytic effects. Many plant species used in traditional medicine, such as Passiflora coerulea, have flavonoids with anxiolytic function. affinity of flavonoids for core benzodiazepine receptors has been due to this effect. In addition, quercetin isoquercetin glycosides have been found to have sedative effect on central nervous system in mice. However, further research is needed to classify phytoconstituent responsible for

anxiolytic activity of ethyl acetate ethanolic extract at doses of 400 mg/kg to clarify mechanism of action.[10]

It can be shown that reliable paradigm for human generalised absence seizures are decapitated by PTZ-induced convulsions. PTZ has been used in lab to discover research pharmaceuticals that could better control seizure susceptibility. While precise mechanism of PTZ's epileptogenic action is uncertain, it has been proposed that it induces seizures by inhibiting GABA operation. Seizures have been found to be inhibited or attenuated as GABAergic neurotransmission is enhanced. Inhibition of GABAergic neurotransmission or action, on other hand, has been found to stimulate or encourage seizures.[11, 12] Many anticonvulsant drugs, such as diazepam pentobarbitone, prevent pentylene-tetrazole-induced seizures by stimulating activity of GABA-A receptor, which promotes opening of chloride-ion channels. Thus, crude petroleum ether, ethyl acetate, ethanolic extract may have anticonvulsant properties by increasing GABA ergic neurotransmission.[13]

CONCLUSION

The pharmacological evidence for folklore argument regarding efficacy of C.carandas leaves extract has been provided by these experimental findings. It is therefore necessary to investigate separation of active values responsible for such behaviour.

The leaves of Carissa carandas have been shown to have anticonvulsant sedative properties in this research. This behaviour may be attributed to effects of phytoconstituents such as flavonoids, terpines, and alkaloids, among others. It is also important to isolate detect phytoconstituents.

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