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A review on *Celastrus paniculatus* wild (Jyotishmati): It's species, geographical sources, phytoconstituents, and therapeutic uses and pharmacological actions

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Abstract

The *Celastrus paniculatus* wild belongs to family Celastraceae. In Ayurveda is known as 'Tree of life' and 'Elixir of life'. The plant contains bioactive compound such as Alkaloids, Tannins, Flavonoids, Saponins, Steroids, Terpenoids, Phlobatannins, Cardiac Glycosides and Phenolic Compound. It has different properties such as anti-fungal, Immuno modulatory, anti-depressant, anti-bacterial, anti-malarial and anti-oxidant. The plant has significant value in the treatment of cough, asthma, leprosy, epilepsy, insomnia, gout and rheumatism. The *Celastrus paniculatus* has good property for recovering multiple diseases hence it is vigorous source for development of novel drug.

Keywords: *Celastrus paniculatus* wild, phytochemicals, secondary metabolite, Jyotishmati taila

1. Introduction

In Ayurveda the *Celastrus paniculatus* wild mentioned as 'Tree of life', is a member of Celastraceae family. The *Celastrus paniculatus* seed oil has significant action on CNS [1]. The *Celastrus paniculatus* wild is also known as Intellect tree, Jyotishmati, Malkanguni. It is medicinal plant, found in Sub Himalaya arch up to 2000m in central India, western and Eastern Ghats largest area of Rajmahal hills in Bihar and Orissa up to 1500m altitude. The *Celastrus paniculatus* oil possess Tranquilizing effect, Central Muscle Relaxant, anti-emetic, anti ulcerogenic and adaptogen with memory enhancing properties. According to traditional system of ancient medicine, *Celastrus paniculatus* beneficial in appetizer, laxative, emetic, aphrodisiac, brain tonic and used in treatment of leprosy, asthma, cough, paralysis, gout, rheumatism, leucoderma and headache. The bark of *Celastrus paniculatus* is reported for the causing abortion [2].



Fig 1: Climbing shrub of *Celastrus paniculatus* wild



Fig 2: Immature seeds of *Celastrus paniculatus* wild

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Fig 3: Mature Seeds of *Celastrus paniculatus* wild



Fig 4: Dried seeds of *Celastrus paniculatus* wild

2. Plant taxonomy

Botanical name: *Celastrus paniculatus*

Kingdom: Plantae

Clade: Eudicots

Subkingdom: Angiosperms

Divisions: Tracheophyta

Order: Celastrales

Family: Celastraceae

Subfamily: Celastroideae

Genus: Celastus

Species: *Paniculatus* [3, 15, 16]

3. Plant synonyms

- **Sanskrit:** Alavan, jyotishmati, amruta, jyotishka, swarnlata, pita tel, matipriya, vanthiruchi, katumbi, Magha Sudhi, Medhya, Paravatpadi
- **Assamese:** Kapalphotla, pokiri
- **Bengali:** Kujri, kujari, lataphatki, banuche
- **English:** Staff tree, intellect tree, black oil tree, climbing staff tree
- **Guajarati:** Malkangani, velo
- **Hindi:** Malkangani, jyotishmati
- **Kannada:** Doddagajanur, gangunge beeja, kariganne, bhavamga
- **Kashmiri:** Kongorppilly
- **Malayalam:** Cerupunnari, Vizhinjam, pallavam
- **Marathi:** Malkanguni, pigavi, chicharti
- **Oriya:** Malkanguni, jyotishmati, katopesu, kharosana, noivado
- **Punjabi:** Malkangoni, samphu, sankhu
- **Tamil:** Valuluvai, atiparichcham
- **Telugu:** Malkangani, peddamaveru, bavanji
- **Urdu:** Malkangani
- **Garhwal:** Malkauni
- **Arabic:** Qiafoor, tilan, habbe kilkil
- **Deccan:** Malkanguni
- **Burmese:** Myinkongnayoung
- **Sinhalese:** Duhudu

- **Nepali:** Ihero
- **Persian:** Kaal [10, 11, 15, 16]

As per survey, the peoples of village Kari and Natambi, Tal-Bhor, Dist. Pune, said that the plant of *Celastrus paniculatus* is called as Chicharti or Chichart. The peoples make spicy sauce of the seed of *Celastrus paniculatus* seed which improves digestion. The seed oil is used for joint pain and headache. The grinded leaves of *Celastrus paniculatus* mixed with cows ghee and taken with warm water by orally it can reduce the menopause and decrease the menstrual pain

4. Species of *Celastrus paniculatus* wild

There are 30 species are found in the world, in which 25 in China and seven species in India. Some species of *Celastrus* are as follow:

- *Celastrus paniculatus* wild
- *Celastrus flagellaris* Rupr
- *Celastrus angulatus* maxim
- *Celastrus orbiculatus* thunb
- *Celastrus monospermus* Roxb
- *Celastrus vulcanicolus*
- *Celastrus stephanotis* makino
- *Celastrus rostharnianus*
- *Celastrus hindsii* benth
- *Celastrus gemmatus* loes
- *Celastrus subspicatus* hook
- *Celastrus hypoleucus* warb
- *Celastrus stylossus*
- *Celastrus aculeatus* merr
- *Celastrus glaucophyllus* render
- *Celastrus kusanoi* hayata
- *Celastrus oblanceifolius*
- *Celastrus serratus* Blanco
- *Celastrus multiflorous* Roxb
- *Celastrus Montana*
- *Celastrus nutans*
- *Celastrus senegalensis* lam
- *Celastrus spinosa* Royle

The *Celastrus paniculatus* and *Celastrus orbiculatus* are most common investigated species than others. In United States the *Celastrus paniculatus* has found and rarely *Celastrus orbiculatus* but the *Celastrus orbiculatus* is known as poisonous. The *Celastrus hindsii* benth species in Vietnam used for the treatment of ulcers, tumor and for tea leaves are used, and its large woody climber found in Assam and Meghalaya. *Celastrus monospermoides* were used for fever in Malaysia. In china the *Celastrus orbiculatus* used to treat amenorrhea, pain in waist and lower extremities. The *Celastrus angulatus* root and bark prescribed for the head sores, fracture, swelling, pain and vaginal pruritus. The *Celastrus angulatus* and *Celastrus rostharnianus* posse's insecticidal activity. The species *Celastrus aggregatus* should have inflorescence which is compact and shorter than the leaf so the fruits are airing in dense clusters. The *Celastrus scandens* which is less vigorous and having more seed dormancy than *Celastrus orbiculatus* thunb [4]. The species of *Celastrus spinosa* Royle synonym in Hindi as Falidaar and Kandiar in Punjabi. The *Celastrus senegalensis* lam is synonym as Gagachini in Hindi and which is used in snake bite [5, 14, 18].

5. Geographical sources of *Celastrus paniculatus* wild

Table 1: Geographical sources of *Celastrus paniculatus* wild in India

Sr. No	State	State Region
1	Andhra Pradesh	Visakhapatnam, Lehammam, Tirupati
2	Assam	Myong area, Morigan
3	Chhattisgarh	Bilaspur, Dhamotri
4	Gujarat	Banaskantha
5	Haryana	Ambala district
6	Himachal Pradesh	Jwalamukhi, Kangra district
7	Kerala	Attappady, Wayanad
8	Madhya Pradesh	Satpura mountain, Chhindwara, Betul, Vindhyan Plateau, Siddhi district, Chhatarpur, Amarkantak forest, Jhabua
9	Maharashtra	Purandhar, Amravati, Nandurbar, West Vidarbha
10	Odisha	Mayurbhanj
11	Rajasthan	Kolipura, Mukundara hills
12	Tamil Nadu	Puzhayaru Riverbank, Kanyaumari
13	Uttarakhand	Garhwal Himalaya, Siwalik
14	Uttar Pradesh	Sonbhadra, Varanasi, Kheri

The *Celastrus paniculatus* wild are also found in middle and south Andaman's, Asia, Australia, north and south America, China, Japan, Malaysia, Indonesia, Taiwan, Philippines, Thailand, Sri Lanka, Maldives, Cambodia, Laos, Myanmar, Nepal, Vietnam, Pacific Islands [6].

6. Morphology/organoleptic evaluation

Celastrus paniculatus is scrambling shrub having pendulous branches especially young shoots [5, 10, 16, 19, 20, 21].

Leaves: The leaves are glabrous in nature broadly ovate and acuminate.

Colour: Green

Shape: Oval or elliptic

Texture: Leathery and smooth

Bark: Colour-pale or reddish brown (outer bark)

Arrangement: Alternate

Margin: Toothed

Apex: Acute, acuminate

Base: Obtuse or rounded

Flowers: Flowers are unisexual, yellowish-green and greenish white in colour, pendulous panicles. Flowering season is February to April.

Fruits: Yellow in colour, Capsule like globule containing 3 valved, 3 celled contain 3-6 seeded. Fruiting season is May to December.

Seed: Colour- reddish brown

Shape: Ellipsoid enclosed in orange, red fleshy aril and grows inside the fruits

Odour: Unpleasant

Taste: Bitter

7. Seed morphology and viability

Seeds showing reddish coloured / reddish brown with enclosed aril and having orange yellowish stain [2].

Table 2: Seed morphology and viability of *Celastrus paniculatus* wild

Sr. No	Parameter	Range	Mean	S.E
1	Weight of 100 seed(gm)	1.596- 1.723	1.636	±0.02
2	Seed length(mm)	4.4-5.1	4.98	±0.35
3	Seed breadth(mm)	1.5-2.1	1.79	±0.06
4	Seed thickness(mm)	1.2-1.5	1.32	±0.03
5	Volume of 100 seed(cc)	0.79-0.82	0.80	±0.04
6	Seed density(g/cc)	1.912- 1.946	1.88	±0.03
7	Seed viability (%)	95.0-98.0	96.8	±0.58

8. Phytochemical screening of leaves and seed of *Celastrus paniculatus* wild

Methanolic extract of leaves and seeds contain following constituents [3, 7, 8].

Table 3: Preliminary phytochemical screening of the leaves and seed of *Celastrus paniculatus* wild

Parameter	Methanolic leaves extract	Methanolic seeds extract
Reducing sugar	-	-
Antraquinones	-	-
Saponins	+	+
Flavonoids	+	+
Steroids	+	+
Terpenoids	+	-
Tannins	+	+
Alkaloids	+	+
Aldehyde/ketones	-	+
Phenols	-	+
Glycosides	-	+
Phlobatannins	-	-
Carbohydrate	+	+
Proteins	-	-
Amino acids	-	-

(+) indicates presence and (-) indicates absence of that chemical constituent.

9. Therapeutic uses

Jyotishmati is an ancient plant so it used for many problems

in which the Jyotishmati taila was used for any type of pain relief, also used in cure of wound, leprosy treatment, 500gm

seeds (grinded seeds) taken with honey can reduce the arthritis, useful in pain during menstrual, reduces the problem of infertility, cure urinary problem, piles, fistula treatment, Jyotishmati oil applying on paw which is helpful for eye disorder, lungs disorder, treat problems related to the libido, penile erection, sexual disorder. Jatamansi and Jyotishmati taila given with combination which is treat insomnia. *Celastrus paniculatus* is very good and natural dye or pigmentation which is used in pharmaceutical and textile industry. Since 5000 years old Ayurveda system which referred as natural healing. It's comes from the Vedic culture of India. The Jyotishmati means plight of psycho motor function (Jyoti- enlightenment, mati-brain function). It's used to treat the neurological disease and pain disorders including muscle cramps, backache, sciatica, osteoarthritis, facial paralysis and paralysis [9].

10. Traditional classification of Jyotishmati

Jyotishmati: It indicates medhya property

Katbhi, Kanguni: A variety of grains with seed resemble is called kanguni

Paravathpadi: A foot of plant contains white/grey spot.

Pinya: Articles of trade

Lata: Meaning climber or veli

Kakandi: Crow's egg and fruit are same [10].

11. Classification of Jyotishmati according to Vedas

11.1 Charak Samhita

Classified under mulini, shirovirechana, shirovirechana according to charak the useful part of (most) precious Jyotishmati is roots [10].

11.2 Sushruta samhita

It's classified under the shirovirechana, adbhobhagar, and arkadigana. Sushruta can also classified it in nadiwrakadina chikitsa, krumi, prameha unmad.

11.3 Ashtanga hridaya

According to Ashtanga hridaya Jyotishmati can classified under the category of arkandi gana.

11.4 Nighantus

Nighantus can describe some vargus

- Bhavprakash nighantus: Haritkyadi varga.
- Rajnighantu nighantus: Guduchyadi varga.
- Mandanpal nighantus: Abhayadi varga.
- Dhanavantari nighantus: Guduchyadi varga.
- Kaiyadeva nighantus: Aushadhi varga.
- Shodhal nighantus: Guduchyadi varga.

12. Rasapanchaka of Jyotishmati

Rasa (Taste) - Katu (pungent), Bitter (tikta),

Guna (Quality) - Tiksha (penetrating)

Veerya (potency) - Ushna (hot)/dah.

Vipaka – katu.

Prabhav – medya [15].

13. Role of Jyotishmati in tridosha

It reduces Kapha due to its Katu (pungent) and Tikta (bitter) taste and Ushna Veerya. It also alleviates Vata due to its shinghaguna and Ushna Veerya properties also used in Kaphagana [12].

14. Traditional uses of Jyotishmati taila

It typically used in vatavyadhi (Disorders of central nervous system), Aruchi (Anorexia) kasarthava, kushta (skin disorder), Gulma (Abdominal Tumor), Shoth (Inflammation), Mutrakrucha (Difficulty in urination), Ardit (Facial palsy) [10]. *Celastrus paniculatus* seed oil has been used in the improvement of memory and its mentat syrup formulation beneficial for the memory enhancing and mental disorder [12].

15. Matra / dose

Seed - 5-15, Oil – 5-15 drops, Seed powder – 1-2gm [10].

16. Formulation

Jyotishmati Taila, Smritisagara Rasa, Jyotishmati Choorna, Chandanadi Taila, Karanjadi Yoga.

17. Jyotishmati are combination with other herbs

For topical application oil is combined with Apricot oil, Bringhraj oil, and for memory enhancer. It used with Cardamom, Almonds, Jatamansi and Sankhpushpi etc [10].

18. Side effects

If more than 2gm of drug are administered - It causing Vamana (*Induce vomiting*), Virechana (*Induce puragation*).

The *Celastrus paniculatus* oil is used in mentally retarded children for improvement in IQ scores, learning ability and decreased the content of catecholamine metabolites. In natural condition seed shows erratic, poor germination [2].

19. Properties and formulation

Rasa: Kutu, Tikta

Guna: Sara, Usna, Tiksna

Virya: Usna

Vipaka: Katu

Karma: (prabhava: meddhya), sirovirecanopaga, dipana, kaphahara, Vamaka, vatahara, virecaka, meddhya.

20. Phenology

During September – October fruits become mature up to 3 to 4 years. Flowering and fruiting become a start. Its show shattering character.

21. Secondary metabolites of *Celastrus paniculatus*

Plants contain following secondary metabolites [11, 17].

Table 4: Secondary metabolite of *Celastrus paniculatus* wild

Sr. No	Secondary Metabolites(s)	Plants Parts
1	(1 α ,2 α , 8 β , 9 β)-1,2,8,14- tetrakis(acetyloxy)-9-(benzoyloxy) dihydro- β -agar furan, Triptogelin D1, lupeol	Seed, root, barks Whole plant
2	Zeylasterone	Root, outer bark
3	Celastrine	Seed
4	Paniculatine	Stem
5	Trans- β -copaene	Seed
6	Linalool	Seed
7	γ -muurolene	Seed
8	Cubenol	Seed

22. Chemical composition

In *Celastrus paniculatus* contain large number of chemical or phytoconstituent like malkanguniol, Malkangunin, Celapanine, Callappengine, Celapagin, Celastrine, Paniculatine, Celastrol, Pristimerin, Zeylasteral, Acetic acid, Benzoic acid, Oleic, Linoleic, Palmitic, Stearic, crude Lignoceric acid, Tetracasoani, Tetra sterol, Beta amyryn, Beta sitosterol, Phytol, Erucic acid, Trans beta Copaene, Linalool, Murrolene, Cubenol, Valeric acid, Pentadecylester, Phytone, Palmita-aldehyde diallyl [7, 13, 14].

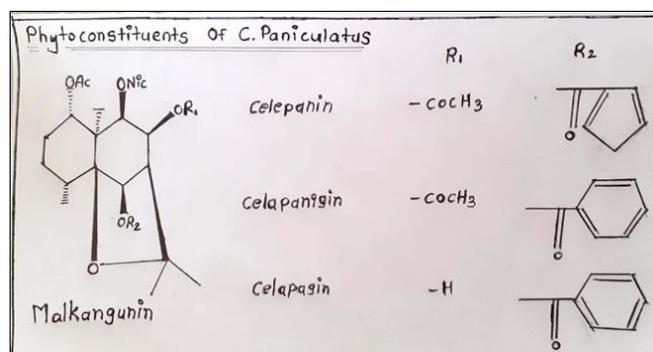


Fig 5: Phytoconstituents of *Celastrus paniculatus* wild

23. Macroscopy

The leaves are simple alternate in arrangement apex is acuminate and base is cuncate or rounded; margin is crenate finely, venation is reticulate; shape is very ovate, broadly. Fresh leaves green in colour, odorless with slightly acid taste. The size of leaf is 11cm length and 6 cm breadth [12, 15].

24. Microscopy

The anomocytic type of stomata present in leaf ranging from 18 to 20mm in length and 14 to 15mm in width. There are three palisade cells were observed in microscopy of leaf. The microscopic estimation of *Celastrus paniculatus* leaf powder contains xylem, sclerenchyma, parenchyma, collenchyma, and mesophyll [12, 15, 16].

25. Use of Jyotishmati seeds in India

The malkangani oil which is extracted from the seed of *Celastrus paniculatus* having good effect on Central Nervous System. The malkangani oil used in all over state of India for different reason [14].

25.1 In Himalaya: *Celastrus paniculatus* was used in treatment of hemorrhoids, piles, gout, dysentery, cold, Rheumatism, leprosy, snake bite, wounds. For relief of gas and acidity take 2-3 gm. of fine powder orally [6].

25.2 In Haridwar district: Paste of leaves and roots are used for headache. Crushed roots used in treatment of pneumonia.

25.3 Uttar Pradesh: Root powder is beneficial for cancerous tumors.

The paste of root and bark apply to the forehead in children for the cure of boils.

25.4 Madhya Pradesh: In leucorrhoea treatment powdered bark is taken with cow milk once day, also used in Leprosy, Epilepsy treatment.

25.5 Odisha: The pingu-kujri i.e. *Celastrus paniculatus* used in treatment of joint disease. In winter season the seed oil is used for body warmth.

25.6 Gujarat: The seed oil is rubbed in affect part to treat gout. According to traditional phototherapy. The *Celastrus paniculatus* oil is for hair care. Dried powdered of mixed leaves, flowers, fruits, seeds taken with milk regularly to treat

mental disorder.

25.7 Tamil Nadu: Decoction of bark of *Celastrus paniculatus* gives orally on empty stomach for 7 day in women for abortion. It also treats the other stomach problems.

25.8 Karnataka: In fertility treatment and pain in menstruation are used by *Celastrus paniculatus* roots.

25.9 Maharashtra: The *Celastrus paniculatus* oil is applied on paralyzed parts as well as taken orally 2ml daily morning and evening. It also used for brain related disorders.

26. Traditional medicine

The *Celastrus paniculatus* plants known for the centuries as "Elixir of life" according to Ayurveda *Celastrus paniculatus* stimulate 'Medha' (intellect) and promotes 'Smruti' (memory) as per the charak. Root or seed decoction have internally for brain tonic, headache, depression. In shushruta seed oil is prescribed for neurological disorder, urine infections, skin affections, intestinal parasites. In classic ayurvedic, the bark is beneficial in abortifacient activity. As per Thai traditional medicine it treats the intermittent fever (old style doctor association 1964). It also used as natural insecticide in China.

27. Pharmacological activities of *Celastrus paniculatus*

27.1 Anti-depressant activities

The Feroj A. wani used the petroleum ether extract of *Celastrus paniculatus* seed and imipramine was standard drug. Reserpine was used as inducer. Two models were used; tail suspension test and forced swimming test predict the immobility period in mice as well as rats. The result was concluded that drug possess anti-depressant activity and for the mechanism of action and ingredient was responsible [4].

27.2 Sedation and anti-Convulsion activity

Study was performed on cats, monkeys, mice and rats. The *Celastrus paniculatus* wild seeds petroleum ether extracts and ethanolic both extracts were used at doses 200mg/kg, 400mg/kg, 600mg/kg were give intraperitonally. Electroshock, pentylenetetrazole (PTZ) was used as inducer. Latency of seizures, death time and percentage mortality was noted. The data concluded that the both extract posse's sedation and anti-convulsion activity significantly [1].

27.3 Immune modulatory activity

The petroleum ether extract of seed *Celastrus paniculatus* stimulates the humoral immunity as shown by increase in cell, Mediated immunity and antibody titre as predicted by mean percentage increase in paw volume, also increase in percentage of WBC count, hemoglobin percentage, phagocytosis, RBC count and oxidative parameter such as catalase reduced glutathione superoxide dismutase and decrease in lipid peroxidation activities were observed. So the author Kallakunta Salomi and S.Saba Shafeen concluded that *Celastrus paniculatus* has significant Immunomodulatory activity [14].

27.4 Iron chelating activity

The author Yash. J. Nakhva was performed this study on rats. For this vitro study ferrous sulphate, potassium thiocyanate, ferrozine, purified water and, methanolic extract of crude drug were used. The iron dextrose injection six time in 21 days for all group it show significant decreases serum iron level, reduction of SGPT, SGOT, Creatinine and CKMB level. *Celastrus paniculatus* show significant effect of iron chelating activity [8].

27.5 Opium poisoning

The *Celastrus paniculatus* and vishtinduk vati should both medicines given with cow's ghee and milk by orally. It can reduce the signs of opium toxicity like anxiety increased tearing, muscle aches, sleeplessness and watering of nose the *Celastrus paniculatus* can help to opiate withdrawal. It is unique ayurvedic medicine in opium poisoning condition *Celastrus paniculatus* acts as potent antidotes [10].

27.6 Anti-fungal activity

For the six species of fungi there 28 medicinal plants were screened in which only three are effective against this six fungi. The fungi are Trichophyton mentagrophytes, Trichophyton rubrum, Trichophyton soudanense, Candida albicans, Torulopsis glabrata and Candida krusei. The three species is *Celastrus paniculatus*, Eriodendron anfractuosum and Ficus glomerata showed inhibitory activity. [14]

27.7 Anti-bacterial activity

The *Celastrus paniculatus* aqueous extract and oil both shows potent anti-bacterial activity against numerous microbes (Bacillus subtilis, coryne bacterium diphtheriae, Salmonella typhosa, Salmonella paratyphi A and B, Escherichia coli, Proteus vulgaris, Bacillus cereus, salmonella dysenterica, klebsiella pneumoniae), But inactive against Salmonella paratyphi B, Bacillus subtilis [14].

27.8 Anti- malarial

The chloroform extract of stem by fractionation shows the significant malarial activity against plasmodium falciparum by using vitro culture system. The chloroform extracts containing a pristinerin and quinonoid triterpene show highest malarial activity.

27.9. Wound healing activity

The triterpene compound containing lupeol which is isolated from petroleum ether extract of *Celastrus paniculatus* leaves. There are three models excision, incision and dead space wound models on Swiss albino rats (15- 225 gm) by using nitrofurazone skin ointment as standard. The epithelialization rate is higher of incision wound as compared to control group. Lupeol has greater wound healing activity as compared to standard Nitrofurazone. [14]

27.10 Anti-arthritis activity

It was found the body weight loss and the swelling of paw was reduced after administration of petroleum ether and alcoholic extract of *Celastrus paniculatus* seed by using Wistar albino rats for the Freund's adjuvant arthritis study. The *Celastrus paniculatus* seed both extract shows anti-arthritis activity.

27.11 Anti-oxidant activity

The free radical scavenging activity was performed by using *Celastrus paniculatus* seed oil, two extract ethanolic extract and methanolic extract. Neuroprotective effect of water induced oxidative stress and glutamate induced toxicity on neuronal cell culture. The all about study concluded that the *Celastrus paniculatus* and the both extract were protecting the cell against hydrogen peroxide induced toxicity and their antioxidant activities [1, 10].

27.12 Hypolipidaemic activity

50% ethanolic *Celastrus paniculatus* seed extract at dose 500mg/kg on rabbits which is hyperlipidaemic. The reduction

of cholesterol and triglyceride and LDL level shows the extract was beneficial for hypolipidaemic condition. The faecal excretion of cholesterol was improved [1, 14].

27.13 Analgesic and anti-inflammatory activity

Hot water tail immersion test in mice and carrageenan induced paw edema in rats the models are used by administration of flowers of *Celastrus paniculatus* by using solvent as methanol. Ibuprofen 100ml /kg was standard. The current data shown that the *Celastrus paniculatus* flowers extract posse's good analgesic and anti-inflammatory activity with compared to ibuprofen. The mathur *et al.* also proved that *Celastrus paniculatus* seed oil has also significant activity as compared with aspirin [1, 8].

27.14 Anti-fertility

Celastrus paniculatus seed oil administered orally at dose 0.2ml animal for 48 hours on adult rats for 30 days. The author Wangoo and Bidwai have statement that the oil shown antispermatogenic / fertility effect, by reduction of focal necrosis, and degenerative changes in liver during treatment [14].

27.15 Cardiovascular activity

The somanadhan *et al.* were found the when *Celastrus paniculatus* seed oil as emulsion form and aqueous extract were administered on cat animal model through orally at dose 50- 100 mg/kg. It increased the observed gradual fall of cardiac output increased the pulse pressure and inhibition of angiotensin converting enzyme.

27.16 Learning and memory

The Jyotishmati oil and ethanolic extract both shows the improved learning and memory. Which is compared with saline as control the both oil and extract shows significant effect on learning and memory process [10].

27.17 Tranquilizing effect

Hexobarbitone produced hypothermia in mice and amphetamine induced hyperactivity were used for screened the activity, it was performed on rats; mice, monkey, and cats in dose seed oil 200mg/kg. It reduced the spontaneous motor activity. The *Celastrus paniculatus* seed possess tranquilizing effect [4, 8].

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