



REGULAR ARTICLE

TRADITIONAL HERBAL MEDICINES OF THE COASTAL DIVERSITY IN TUTICORIN DISTRICT, TAMIL NADU, INDIA

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SUMMARY

The coastal plant species of Tuticorin district bears high medicinal and ecological values. Now, the coastal plants have been extensively modified by human activity. The study includes direct interview which were conducted among local communities and fishery communities. The study was carried out during in January 2010 to June 2010. A total of 41 medicinal plants have been collected and their popular uses are listed. Due to continuous loss of coastal vegetation, the associated indigenous knowledge is also gradually disappearing. So, it is imperative to protect and restore the coastal vegetation, as an immediate priority.

Key words: Coastal vegetation, Medicinal plants, Ethnobotany, Traditional knowledge

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1. Introduction

Medicinal plants are traditionally used in fisher-folk medicine. (Bandaranayake, 2002, 1998) The coastal plants are also used for construction materials, fuel wood, and many other purposes. Ethnobotanists can play a main role in returning such disappearing knowledge to local communities. In this way, local ethnomedicinal knowledge can be conserved as part of living economic and ecological systems, while helping to maintain a sense in local traditional knowledge and practice and reinforcing links between local communities and the environment essential for conservation. (Gary and Martin, 1995) Traditional and indigenous system of medicines persists all over the world. (Kalita and Bikash, 2004) Developing countries use more than 80% traditional medicines for primary healthcare. (Farnsworth N and Soejarto, 1991; Pei shengji, 2002) The herbal medicines are in global demand. (Srivastava, 2000). In India, the ayurvedic medicines are estimated in market level at 20% annually (Subrat, 2002). The pharmaceutical drugs, consumed in developing countries is 15% only, and relatively more affluent people take a large proportion of even this small

percentage (Toledo, 1995). Medicinal plants can provide a significant source of income for rural life in developing countries, especially through the sale of wild harvested material. Coastal vegetation contains many species of specific flora and thus it is an ecological storehouse rich in Biodiversity and also has high ecological values. (Untawale, 1994; Banerjee, 1994) The length of coastal line in India for 7,500 km with numerous lagoons, beaches, estuaries and mangrove swamps, which is rich in living and non-living resources (Anonymous, 1987). Fishing communities living close to and interacting with Tuticorin mangrove forest have gained unique cognitive understanding of the ecosystem from the resource utilization pattern. Local communities have developed their own traditional system of utilizing these coastal plants for medicinal purposes.

Even today this area holds much more hidden treasure, as almost 80% of the information on the uses of plants as traditional medicines has not been documented from different sectors of the district. Keeping this in view, the present study was initiated, with an aim to document

the knowledge of rural people and folklore on the utilization of medicinal plants in remote areas of Tuticorin district.

2. Material and Methodology

The coast of Tuticorin is the part of Gulf of Mannar Biosphere Reserve is situated in between the latitude of 8°45'N and 9°02'31" N and the longitude of 78°07'17" E and 78°19'18" E. This area is covered with mangroves and their associates and is endowed with a combination of ecosystem including scrub jungles, aquatic vegetation, coastal vegetation and terrestrial vegetation.

Medicinal plants survey from the local inhabitants from Tuticorin Coastal environment was undertaken during January 2010 to June 2010. Traditional herbal medicine information was collected as per the described methods. (Martin, 1995; Jain 1964) The information was collected from fishery communities and local peoples with help of interviews. During the survey 40 local fisherman communities belonging to the age group of 45 - 65 yrs were interviewed, amongst the informants, 9 were Traditional Medicine Practitioner in different villages. Data collection through structured questionnaire with flexibility of question was prepared to collect all possible information on Traditional Medicine preparation, application among the Tuticorin Traditional Medicines. Samples of such plants were collected, identified with the help of Flora of Gulf of Mannar and The Flora of the Tamil Nadu carnatic (Daniel and Umamaheswari, 2001; Matthew, 1983). Survey of coastal fishery communities and local people shows that they are widely distributed in. Daruvaikulam, Tuticorin, Palayakayal, Punakayal areas, since the period of investigation was only 6 months, the present ethnomedicinal studies with reference to the coastal area of Tuticorin, south east coast, Tuticorin district, Tamil Nadu.

A literature survey was carried out for compilation of existing information on various uses of the coastal environment plants species in different areas. Field trips were undertaken in Tuticorin coast of Tamil nadu in different seasons during January 2010 to June 2010. At the time of field survey,

data were collected on the indigenous uses of coastal plant species by the fishery communities and local community.

3. Result and Discussions

The present paper calls attention to the fact that 41 plant species were used for traditional medicine in this area of the Tuticorin district. The enumerated 41 plants are used to cure many different types of human diseases in Tuticorin coastal area. A total of 41 plant species belonging to 27 families (Table 1) were identified, and also the qualitative analysis, the maximum species were herbs (18) followed by trees (11), shrubs (9) and climbers (3) as given in the Table 1. These were reported to be used in the control of 30 diseases. Most species were found to have multiple uses in the study area. Many plants are used to treat cold, cough, fever, stomachache, headache, wounds, and ear complaints. Most of the remedies were taken orally. They were also used in direct application of the paste for ailments like skin diseases, wounds, heel cracks, poison bites, rheumatism, body pain and headache. Some of the ailments were treated by internal consumption as well as topical application such as poison bite, rheumatic and body pain, and also, some of the ailments such as cold, cough, fever and headache were involved. Before starting the treatment, the condition of the patient was observed deeply and then the prepared medicines were given to treat the diseases. The plant parts used for the preparation of medicine, the leaves were found to be the most frequently used plant parts in the preparation of remedies. The following methods of preparation used to four categories, many plant parts applied as a paste, some fresh parts of plant were used for juice extraction, to prepare decoction in the combination of water and powder made from fresh or dried parts of plant material. It was also observed that some were used in more than one method of preparation. *Rhizophora apiculata* Bl, bark extract is used for diarrhoea, dysentery, nausea, vomiting and amoebiasis, as antiseptic and to stop bleeding, and also used to other countries like Indonesia and Malaysia, the plant is used to treat dysentery, probably on account of its astringency.

Table 1. Medicinal plants in the Coastal area of the Tuticorin district

Sl. No	Plant name	Family	Tamil Name	Habit
1.	<i>Acalypha indica</i> L.	Euphorbiaceae	Kuppaimeni	Tree
2.	<i>Achyranthus aspera</i> L.	Amaranthaceae	Nayuruvi	Herb
3.	<i>Alternanthera sessilis</i> R.Br.	Amaranthaceae	Ponnanganni	Herb
4.	<i>Argemone mexicana</i> L.,	Papaveraceae	Premathandu	Herb
5.	<i>Asparagus racemosus</i> Willd.	Liliaceae	Tannir vittan	Climber
6.	<i>Avicennia officinalis</i> L.	Acanthaceae	Alaiyathi	Tree
7.	<i>Borassus flabellifer</i> L.	Palmaceae	Panaimaram	Tree
8.	<i>Calophyllum inophyllum</i> L.	Casurinaceae	Punnai	Tree
9.	<i>Calotropis gigantea</i> (L.)R.Br. ex.Ait.	Asclepiadaceae	Erukku	Shrub
10.	<i>Cassia occidentalis</i> L.	Caalpiniaceae	Peravirai	Herb
11.	<i>Cassia tora</i> L.	Caalpiniaceae	Usittaharai	Herb
12.	<i>Cissus quadraangularis</i> L.	Vitaceae	Pirandai	climber
13.	<i>Clerodendrum inerme</i> (L.)Gaertn.	Verbenaceae	Peechalathi	Shrub
14.	<i>Crotalaria retusa</i> L.	Fabaceae	Sannappu	Shrub
15.	<i>Crotalaria verrucosa</i> L.	Fabaceae	Kilukiluppai	Herb
16.	<i>Cyanodon dactylon</i> (L) Pers.	Poaceae	Arugampul	Herb
17.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Amampatchaiarisi	Herb
18.	<i>Evolvulus alsinoides</i> L.,	Convolvulaceae	Vishnukranthi	Herb
19.	<i>Hemidesmus indicus</i> L. R.Br.	Periplocaceae	Nannari	Climber
20.	<i>Hibiscus tiliaceus</i> L.	Malvaceae	Neerparuthi	Shrub
21.	<i>Ipomoea pes-caprae</i> (L.) Sweet	Convolvulaceae	Atappan kolai	Herb
22.	<i>Jatropha gossypifolia</i> L.	Euphorbiaceae	Kattamanakku	Shrub
23.	<i>Launaea sermentosa</i> (Willd.) Schantz Bip ex O Kuntze	Asteraceae	Eluthanippondu	Herb
24.	<i>Leucas aspera</i> (Willd.) Link.	Lamiaceae	Tumbai	Herb
25.	<i>Mimosa pudica</i> L.	Mimosaceae	Thottal sinungi	Herb
26.	<i>Phyla nodiflora</i> (L) Greene.	Verbenaceae	Koduppai	Herb
27.	<i>Physalis minima</i> L.	Solanaceae	Tottakkali	Herb
28.	<i>Pongamia pinnata</i> (L.) Pierre	Fabaceae	Pungamaram	Tree
29.	<i>Rhizophora apiculata</i> Bl.	Rhizophoraceae	Surapunnai	Tree
30.	<i>Rhizophora mucronata</i> Poir	Rhizophoraceae	Surapunnai	Tree
31.	<i>Salicornia brachiata</i> Roxb.	Chenopodiaceae	Kattumari	Herb
32.	<i>Salvadora persica</i> L.	Salvadoraceae	Vasamaram	Tree
33.	<i>Sesbania bispinosa</i> (Jacq.)W.F Wight.	Fabaceae	mutcempai, uravi	Shrub
34.	<i>Sida cordifolia</i> L.	Malvaceae	Palampasi	Herb
35.	<i>Suaeda monoica</i> Forssk.ex.Scop	Chenopodiaceae	Umari	Shrub
36.	<i>Tamarindus indica</i> L.	Caesalpiniaceae	Puli	Tree
37.	<i>Tephrosia purpurea</i> (L.) Pers.,	Moringaceae	Kolinchi	Shrub
38.	<i>Terminalia catappa</i> L.	Combretaceae	Nattuvathamaram	Tree
39.	<i>Thespesia populnea</i> (L.) Soland ex Corr.	Malvaceae	Poovarasu	Tree
40.	<i>Vitex negundo</i> L.	Verbenaceae	Nochi	Shrub
41.	<i>Ziziphus mauritiana</i> Lam	Rhamnaceae	Ilanthai	Shrub

The plant contains polysaccharides with anti-HIV activity *in vitro*. (Premanathan et al,1996; Premanathan et al 1999) *Rhizophora mucronata* Poir., the bark extract is used for controlling diarrhoea, nausea and to stop vomiting and also used in other countries, In Burma, the bark extract is used to remove blood from urine. In Japan and China, a decoction of the bark affords a treatment for diarrhea. In Cambodia, Laos, and Vietnam, the plant is used to check bleeding. The Malays drink a decoction of the leaves after childbirth to counteract infection. The plant would be worth investigation for anti-HIV activity *in vitro*. (Premanathan et al,1996) It is known to produce a series of secolabdane and beyerane diterpenes as well as sesquiterpenes and triterpenes, although the pharmacological properties are still unexplored (Anjaneyulu and Rao,2001; Anjaneyulu et al 2002; Laphookhieo et al 2004). *Pongamia pinnata* (L.) Pierre, roots are used to cleaning teeth and ulcer. Bark is used internally for treating bleeding piles, wash wounds and skin diseases. Similarly, It is used as sources of crude drug for treatment of tumours, piles, skin diseases, wounds, ulcer and these activities are related to flavonoides (chalcone) present in the plant. (Tanaka et al,1991; Tanaka et al, 1992). The ethnomedicinal knowledge of the people being passed down from one generation to another has now formed a part of the people's culture. Due to increased public interest and policy making in conservation, companies are looking for new approaches to medicine sources.

Enumeration. I

1. *Acalypha indica* L. (Euphorbiaceae)

It is a weed widely distributed throughout the plains of India. It is used for treating Pneumonia, asthma, rheumatism and several other ailments.

2. *Achyranthus aspera* L. (Acyranthaceae)

The whole plant used to treat night blindness, eye problems. The root, seed and leaf are used in the form of juice and powder to treat excessive hunger, piles, calculi, wound, difficult labour, and sinus, wound due to accident, eye diseases, ear diseases,

diseases pertaining to head, dog-bite, abdominal pain, jaundice, insomnia, and pain in vagina A handful of fresh leaves are made into paste with a little water. This paste is mixed with a pinch of lime and is applied externally on the spot once a day for three days for treating dog-bite. A pinch of root powder in combination with pepper and honey is given to treat cough, powdered roots mixed with honey are given orally.

3. *Alternanthera sessilis* R.Br. (Amaranthaceae)

It is used for curing a skin problem, diarrhoea, and fever and used as an anti-oxidant. The whole plant is used in the form of juice for promoting intellect

4. *Argemone mexicana* L., (Papaveraceae)

It is used as a diuretic, purgative, kills worms, and cures leprosy, eye infections and inflammations. The root and latex are used in the form of powder and juice to treat pox, skin diseases, gonorrhoea and rabies. The leaves are used to treat cough, wounds, ulcers and skin diseases.

5. *Asparagus racemosus* Willd. (Liliaceae)

The roots were used in the form of juice, paste, decoction and powder to treat intrinsic haemorrhage, diarrhoea, piles, hoarseness of voice, cough, arthritis, poisoning, diseases of female genital tract, erysipelas, fever, as aphrodisiac and rejuvenative.

6. *Avicennia officinalis* L. (Acanthaceae)

Fruits are plastered onto boils and tumours. Poultices of unripe seeds stop inflammations, and heal abscesses, ulcers, boils, smallpox sores. Roots are considered as an aphrodisiac.

7. *Borassus flabellifer* L. (Palmaceae)

Root, toddy juice is used to reduced body heat and also in the form of paste, juice and decoction to treat visuchika, insanity, retention of urine and splenomegaly. The Whole plant is also very useful for the Fishery communities.

8. *Calophyllum inophyllum* L (Casurinaceae)

The oil extracted from the fruit, seeds

and roots are employed as a remedy for rheumatism, ulcers and skin diseases, wounds and scabies. Bark is said to be an astringent. A decoction of the bark and latex is used medicinally: internally against diarrhoea, externally against skin and eye diseases and rheumatism.

9. *Calotropis gigantea* (L.) R.Br.ex.Ait. (Asclepiadaceae)

The leaves are used treating to fevers, rheumatism, indigestion, cough, cold, eczema, asthma, elephantiasis, nausea, vomiting, and diarrhea. The flowers are used as digestive, astringent, stomachic, anthelmintic and tonic.

10. *Cassia occidentalis* L. (Caesalpiniaceae)

Leaves and seeds are purgative, laxative, dyspepsia, indigestion piles. Roots were used in treating snake bites and to cure skin diseases. Leaves are used in wounds applied paste.

11. *Cassia tora* L. (Caesalpiniaceae)

It is used as a laxative, acrid, cardiotonic, purgative, antiperiodic, ophthalmic, anthelmintic. The seed, Roots and Leaves are used in the form of paste and oil to treat skin diseases, diabetes, eye diseases and rheumatic ailments. Leaves are edible and used as blood purifier, removes toxic components from body and increase iron content. and also leaves are used in thrice a week to develop immunity against cold, sneezing and fever common in coastal area during rainy season.

12. *Cissus quadrangularis* L. (Vitaceae)

The stem of the plant is used in the form of paste to treat fracture, earache and swellings. Leaves and stems were used to cure menstrual disorders; it is used mixed with honey.

13. *Clerodendrum inerme* (L.) Gaertn. (Verbenaceae)

It contains anti-microbial activity and cures skin infections. It is used in ayurveda, folk and Siddha. Leaves are used for removing pain and in jaundice. Leaf extract and past are used in the treatment of malaria,

infected wounds, inflammation and itching skin diseases.

14. *Crotalaria retusa* L. (Fabaceae)

The whole plant used to cures cough, dyspepsia, fever, cardiac disorders, stomatitis, diarrhoea, scabies, impetigo.

15. *Crotalaria verrucoasa* L. (Fabaceae)

Bark of the roots is peeled, ground with rice water and administered orally. Root paste is applied on wounds and bites. Seed decoction is used in treating poison of saw scaled viper. Leaves are used to cure scabies and impetigo.

16. *Cyanodon dactylon* (L.) per. (Poaceae)

It possesses antimicrobial and antiviral properties, as well as treatment of urinary tract infections, prostatitis, syphilis, and dysentery. It helps in the treatment of diabetes. It is collected fresh and juice of this grass to useful to cure blood vomiting.

17. *Euphorbia hirta* L. (Euphorbiaceae)

The flowers and fruits were used as an ingredient of medicines for cough and asthma, also used in colic and dysentery and diarrhea. The extracts of the plant are used as ear drops and in the treatment of boils, sore and promoting wound healing. The leaves and flowers were mixed with milk used for increasing lactation.

18. *Evolvulus alsinoides* L., (Convolvulaceae)

The leaves are used to cure asthma. It is used for anti-aging remedy, a rejuvenative for general nervous debility, and to improve memory and intellect. The whole plant contains several alkaloids that have sympathomimetic properties which have been shown to be effective as a brain tonic. It is helpful in nervous exhaustion, memory loss and general weakness. The strong decoction is used internally used in the case of intermittent fever.

19. *Hemidesmus indicus* L. R.Br. (Periplocaceae)

The plant root enjoys a status as tonic, alterative, demulcent, diaphoretic, diuretic and blood purifier. It is employed in nutritional disorders, syphilis, chronic

rheumatism, gravel and other urinary diseases and skin affections. Roots used in the form of powder, infusion or decoction as syrup and ulcer of alimentary tracts.

20. *Hibiscus tiliaceus* L. (Malvaceae)

The bark and roots may be boiled to make a cooling tea to cool fevers, congested chest, rheumatism, lumbago and in childbirth. Leaves and flowers used as laxative and resolving properties. It is also economic important for fisherman making fishing nets and light boats.

21. *Ipomoea pes-caprae*(L.) Sweet. (Convolvulaceae)

The whole plants were used in tonic, stomachache and diuretic. Leaves are used in external applications for rheumatism and dropsy and their juice taken as a diuretic. Leaf paste is used to treat inflammation, skin diseases, boils, ulcers, and haemorrhoids, burning sensation, swellings and wounds. Seeds are used for stomachache and cramps.

22. *Jatropha gossipifolia* L. (Euphorbiaceae)

It cures cancer, paralysis, piles, snake bite, skin diseases etc. its fruits and foliage are toxic to humans and animals. Leaves are tied locally in treatment of guinea worm and also used as a purgative and stomachache. Latex is used to cure ulcer. Roots are used to cure in leprosy.

23. *Launaea sermentosa* (Willd.) Schult-Bip ex O Kuntze (Asteraceae)

The whole plant juice is applied for the treatment rheumatism and skin diseases.

24. *Leucas aspera* (Willd) Link.(Lamiaceae)

The whole plants are used for worms, rheumatism, and antipyretic. The juice is extracted from leaves where in applied externally in psoriasis and chronic skin eruptions. Flowers are used with honey for cough and cold.

25. *Mimosa pudica* L. (Mimosaceae)

It is useful for cooling, vulnerary, alexipharmic, biliousness, leprosy, dysentery, vaginal, uterine complaints, inflammations, headache, diarrhoea, fever, burning

sensation. Leaves are used in stop bleeding and leaves are boiled in coconut oil applied to treat skin injury. The leaves and stem are used to treat in scorpion sting. The leaf paste is mixed with cow milk and taken orally once a day to reduce body heat or as a laxative for bowel clearance. Roots are made in powder and mixed with cow milk used to aphrodisiac.

26. *Phyla nodiflora* (L) Greene (Verbenaceae)

The whole plants are used to diuretic and febrifuge. Fresh plant paste or poultice is applied as sapparent for boils, swollen cervical glands and chronic indolent ulcers.

27. *Physalis minima* L. (Solanaceae)

Leaves are used as a bitter, appetizing, tonic, diuretic, laxative, and expectorant, useful in inflammations, enlargement of the spleen and abdominal troubles. The fruits are considered to be a tonic, diuretic and purgative. Diuretic, laxative and

28. *Pongamia pinnata* (L.) Pierre. (Fabaceae)

The juice and oil are extracted from whole plant used for antiseptic and also curing itch, herpes, and pityriasis versicolor. Leaves are used to cure in cold, coughs, diarrhoea, dyspepsia, flatulence, gonorrhoea and leprosy. Roots are used to cleaning teeth and ulcer. Bark is used internally for treating bleeding piles, wash wounds and skin diseases. Seeds are made in powdered to use in febrifuge, tonic and in bronchitis and whooping cough.

29. *Rhizophora apiculata* Bl. (Rhizophoraceae)

The bark extract is used for diarrhoea, dysentery, nausea, vomiting and amoebiasis, as antiseptic and to stop bleeding.

30. *Rhizophora mucronata* Poir. (Rhizophoraceae)

The bark extract is used for controlling diarrhoea, nausea and to stop vomiting.

31. *Salicornia brachiata* Roxb.

(Chenopodiaceae)

The whole plant are made into ash powder and also applied to cure itches.

32. *Salvadora persica* L. (Salvadoraceae)

Fruits decoction used for curing cold, asthma and cough, their poultice used for piles and tumorous. Seeds are used purgative, diuretic and tonic. Fibrous branches are used for oral hygiene and used as an abrasives, antiseptics and astringent.

33. *Sesbania bispinosa* (Jacq.)W.F Wight. (Fabaceae)

The leaves are used for treating a diabetic. Flowers are used to treat skin problems .

34. *Sida cordifolia* L. (Malvaceae)

The leaf decoction is used for curing dysentery and ulcers. Seeds are used in gonorrhoea and colic pains. The leaves of this plant along with the leaves of *Lantana camara* L. are boiled and the vapour is inhaled twice a day to relieve fever. Roots are used as astringent, diuretic and tonic. Powdered roots given with milk in leucorrhoea and frequent micturition.

35. *Suaeda monoica* (Chenopodiaceae)

Root is used for treating a nasopharyngeal infection

36. *Tamarindus indica* L. (Caesalpiniaceae)

Leaves, fruits and seeds are used to treat skin diseases. Roots are used to treat snake bite. Bark is used for wound washing. Leaf juice, coconut oil, pepper powder are mixed and boiled with applied to treat muscle pain.

37. *Tephrosia purpurea* (L.) Pers., (Moringaceae)

The whole plant is used for tonic, laxative and diuretic and also cures diseases of kidney, liver, spleen, heart and blood. Roots and seeds are used as insecticide, and also decoction of the roots is given in dyspepsia, diarrhoea, reumatism, asthma, and urinary disorders. The root powder is salutary for brushing the teeth. It quickly

relieves the dental pains and arrests bleeding.

38. *Terminalia catappa* L. (Combretaceae)

It is used against liver diseases, dysentery, and diarrhea, as an anticarcinogenic, antioxidant, and anticlastogenic. Bark is used to diuretic and cardiogenic.

39. *Thespesia populnea* (L.) Soland ex Corr. (Malvaceae)

It is used in treating scabies, insect bites, gonorrhoea, ringworm, migraine, headache, fistula, psoriasis, scabies, and sprains. Seed oil is used in skin troubles. Bark, roots and fruits are astringent, used in dysentery and haemorrhoids.

40. *Vitex negundo* L. (Verbenaceae)

The leaves are used as anti-inflammatory, antibacterial, antifungal, and for their analgesic properties, cures bruises, injuries, and sores. Fifty grams of fresh leaves are roasted with an equal quantity of sand in a hot pan. This hot mixture is administered on the forehead for relieving headache.

41. *Ziziphus mauritiana* Lam. (Rhamnaceae)

Ripe fruits are edible and purify blood and aid digestion. The fruits are taken and dried and made into powder and administrated orally. Roots are used in fever, cure wounds and ulcers.

Enumeration. II



Conclusion

The coastal plant species of the coastal Tuticorin are extremely important, which play a vital role in the medicinal and social life of people. Conservation and judicious utilization of this coastal plant wealth is important because they have become threatened by over-exploitation, clearing of forest for industrialization, rapid urbanization, pisciculture, human settlements, etc. The inventory of 41 plant species as used by the coastal people throws some light on the medicinal importance of these species. Hence, there is a need for detailed investigations of ethnomedicinal knowledge held by these local villagers before such valuable knowledge is lost forever. A rational and sustainable method of utilization can help improving the life of the local people while maintaining ecological balance of the coastal habitats.

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