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Nutritive Value of Mangoravalli (*Cissus quadrangularis*) Powder and its Value Addition

Malathi A. N.
Department of Processing and Food Engineering, College of Agricultural Engineering Raichur,
manucngowda@gmail.com

Abstract — *Mangoravalli (Cissus quadrangularis)* has been used as a medicinal herb for many years. In ayurveda it has been mentioned as a tonic and analgesic. It also prescribes its uses to treat obesity, osteoporosis, asthma and in healing broken bones. Studies have been conducted to estimate the nutritive value (fat, fiber and ash content) by standard AOAC analytical techniques. An attempt has been made for the preparation of a value added product by using a *Cissus quadrangularis* powder added with rice flour along with curry leaves, coriander leaves, pepper, cumin, chilly etc. Qualitative and consumer acceptance results show that blending of *Cissus quadrangularis* powder with rice flour as a base with the other ingredients is highly acceptable followed by *Cissus quadrangularis* powder with Bengal gram flour as a base. Results indicated blending of *Cissus quadrangularis* powder with wheat flour and Bengal gram flour was more promising to treat obesity and oxidative stress associated problems.

Keyword — *Cissus quadrangularis*, *Cissus quadrangularis* powder, *Cissus* plant, Ayurveda.

1. INTRODUCTION

Cissus quadrangularisLinneaus (Vitaceae) is a common perennial climber, which is distributed throughout India particularly in tropical regions. It is commonly known as Hadjod, Asthisamhara, Harjora, Vedhari and Hadbhanga in Indian languages. In English it is called as Edible-stemmed Vine (Mishra *et al.,* 2009). It can be cultivated in plains coastal areas, jungles and wastelands up to 500m elevation. Plant is propagated using cuttings. Plant flowers in the month of June-December. Plant material occurs as pieces of varying lengths; stem quadrangular, 4-winged, internodes 4-15cm long and 1-2cm thick. The surface is smooth, glabrous, buff colored with greenish tinge, angular portion reddish-brown; no taste and odour. Leaves are simple 2.5-5cm long, broadly ovate or reniform, sometime 3-7 lobed, denticulate, glabrous, cordate, rounded, truncate or cuneate at the base; petioles 6-12mm long; stipules small broadly ovate, obtuse. Flowers are in shortly peduncle cymes with spreading umbellate branches. Calyx is cup shaped, truncate or very obscurely lobed. Petals are 4, ovate-oblong, short, stout. Berry is obovoid or globose, scarcely 6mm, long apiculate, red when ripe. The whole plant including all parts such as stems, leaves, roots are documented to possess medicinal properties in ethnobotanical surveys conducted by ethnobotanists in traditional system of medicine (Shah 2011).

Medicinal plants have been used as traditional treatments for numerous human diseases for thousands of years and in many parts of the world. More than 30% of the entire plant species, at one time or other was used for medicinal purposes. The herbal products today symbolise safety in contrast to the synthetics that are regarded as unsafe to human and environment. Medical plants play an important role in the management of diseases in developing countries where resources are meager. Herbal medicine is based on the premise that plants contain natural substances that can promote health and alleviate illness. The most important of these biologically active constituents of plants are alkaloids, flavonoids, tannins and phenolic compounds The Cissus quadrangularis, invites attention of the researchers worldwide for its pharmacological activities such as analgesic, anti-inflammatory, antioxidant and free radical scavenging activity, anti-osteoporosis activity and bone healing activity (Joseph *et al.*, 2013).

In modern times, *Cissus quadrangularis* has become some what obscure. It is now gaining popularity among many medical practitioners for its medicinal properties in the form of capsule or powder. It is rich in the vitamins/antioxidants vitamin-c and beta-carotene. The present investigation was taken up with an objective to determine the nutritive value (fat, fiber and ash contents) of *Cissus quadrangluris* powder and its value addition.

2. HEALTH BENEFITS

The roots and stems are most useful for healing of fracture of the bones. The stem is bitter. It is given internally and applied topically in broken bones. It is also used in complaints of the back and spine. A paste of stem is useful for muscular pains. The plant has been documented in Ayurveda for the treatment of osteoarthritis, rheumatoid arthritis and osteoporosis. The stem juice of plant is used to treat scurvy, menstrual disorders, otorrhoea and epistaxis. Decoction of shoots with dry ginger and black pepper is given for body pain the infusion of plant is anthelmintic. Leaves and young shoots are powerful alternatives, dried and powdered. They are administering in certain bowel infections connected with indigestion. The plant is useful in helminthiasis, anorexia, dyspepsia, colic, flatulence, skin diseases, leprosy, hemorrhage, epilepsy, convulsion, haemoptysis, tumors, chronic ulcers, swellings. The stout fleshy quadrangular stem is traditionally used for treatment of gastritis constipation, eye diseases, piles and

anemia. The stem boiled in limewater it forms a preserve useful as a stomachic (Joseph (2013).

3. MATERIALS AND METHOD

The tender *Cissus quadrangluris* stem was procured for the study from the Medicinal Unit developed under the National Horticultural Mission (NHM). The determination of nutritive value of *Cissus quadrangularis* powder was carried out in the Department of Food Science and Technology, Agricultural College, Hassan. Cissus powder is prepared by drying the tender *Cissus quadrangluris* stem in hot air dryer at 105°c for 6-8hr. the dried stem were grounded and sieved and other ingredient were procured from local market such as rice flour, onion, chilli, coriander leaf, curry leaf and cumin seed for value addition.

The product was prepared by blending cissus powder and rice flour at three different ratios such as 0.2: 3.8 (5+95g), 0.4: 3.6 (10+90g) and 1:3 (25:7g). Chopped onion, grated carrot, chili, curry leaves and coriander leaves are added to the flour and made into dough. Roties are cooked for 5 to 6 minutes on the pan over a medium flame.

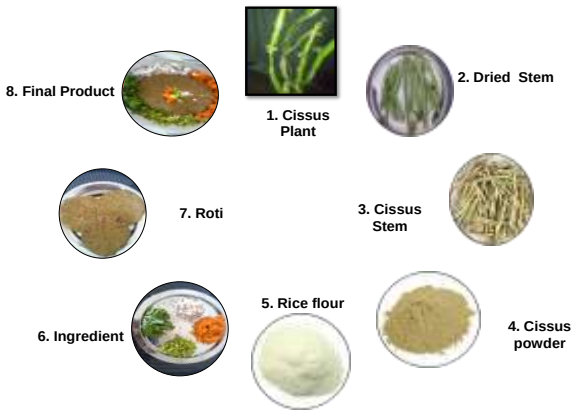

Fig 1. Process flow diagram

3.1 SENSORY EVALUATION

Product	Sensory attributes					
Blending of Cissus powder with rice flour at different ratios	Appearance	Colour	Taste	Flavour	Texture	Overall acceptability
0.2:3.8(5+95g)	4	4	4	3	4	3
0.4:3.6(10+90g)	4	3	4	4	4	4
1:3(25+75g)	4	4	4	4	4	4

3.2 NUTRIENT COMPOSITION OF PRODUCT

Parameter	**g/100g**
Protein	6.44g
Fat	0.73g
Crude fiber	74.36g
CHO	63.73g
Energy	284.55g

4. RESULT AND DISCUSSION

The nutritive value shows Cissus powder is rich in fiber content. The product prepared using Cissus powder blended with rice flour in the ratio of 1:3 (25 + 75 g) is highly acceptable by consumers. *Cissus quadrangularis* has been used to treat obesiy and associated oxidative stress. The typical recommended daily dosage of Cissus extract is between 100 & 500 mg depending upon the concentration of the extract & the severity of symptoms for the powder of the dried plant. The ayurvedic texts recommend a dosage of 3-6 g to accelareate fracture healing. Safety studies showed no toxic effect at dosage as high as 200 mg/kg of body weight. It is also quite safe in either the dried powder form or the commercially available extract (Kothari *et al.*, 2011). The result indicated value addition of the Cissus dried powder is beneficial for its medicinal properties.

5. CONCLUSION

It can be concluded from the use of cissus powder has more health benefits because of its medicinal value. Among the three product prepared at different ratios (0.2:3.8, 0.4:3.6 and 1:3) of blending of cissus powder and rice flour in the ratio 1:3 was found to be highly acceptable and thus helpful in improving health.

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AUTHOR'S PROFILE

My name is MALATHI A. N. and i completed my undergraduate program at the University of Agricultural Science Bangalore. Now am doing M.Tech in the Department of Processing and Food Engineering, at the University of Agricultural Science, Raichur, Karnataka. India.