

Athalakkai – A Hidden Gem of Southern Tamil Nadu

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Introduction

Athalakkai (*Momordica cymbalaria* Hook. f.), a lesser-known member of the Cucurbitaceae family, is an underutilized vegetable crop with significant ethnobotanical and therapeutic potential. Native to India and traditionally consumed in certain regions, particularly in the southern states, this wild cucurbit has largely remained outside the purview of mainstream agricultural research and commercial cultivation. It is popularly referred to as Karchikai in Kannada, Athalakkai in Tamil, Kasarakayee in Andhra Pradesh and Kakrol in other parts of India. Commonly referred to as "wild bitter gourd" due to its morphological and phytochemical resemblance to *Momordica charantia*, Athalakkai is gaining attention for its unique medicinal properties and nutritional benefits (Chinthan *et al.*, 2021).

Despite its long-standing use in indigenous medicine systems for managing ailments such as diabetes, ulcers and inflammation, the cultivation and systematic improvement of *M. cymbalaria* remain minimal. In India, the plant is predominantly harvested from the wild, with sporadic cultivation seen only in tribal and rural pockets. Commonly used as a vegetable by rural communities, its popularity is limited due to its natural bitterness, lack of awareness about its health benefits and the absence of standard cooking methods. This limited cultivation, coupled with a lack of awareness and agronomic standardization, has resulted in its under representation in vegetable production statistics and research priorities.

Status of the crop in Tamil Nadu

Athalakkai, though packed with nutrition and medicinal value, remains a hidden treasure in South Tamil Nadu. However, its tender fruits are highly valued, especially as a natural remedy and health food for diabetics. In Tamil Nadu, it thrives in districts like Virudhunagar, Madurai, Theni, Dindigul, Tuticorin and Ramanathapuram, with its fruits typically found in local markets between November and January (C. Rajamanickam and P. Arunachalam, 2024).

This hardy plant propagates through both seeds and tubers. Its unique tuberous root system allows the plant to survive through seasons – drying off during harsh conditions and re-emerging from the soil in favourable weather. Despite its widespread presence in the wild across Southern Tamil Nadu, Athalakkai is yet to be cultivated under any named variety, leaving it as a largely untapped resource with huge potential waiting to be explored.

Vegetative and Reproductive Features of *M. cymbalaria* (Jeyadevi *et al.*, 2012)

- **Fruits:** Pear-shaped, measuring about 20–25 mm in length, with eight sharp ridges. They taper at the tip and narrow at the base into a curved, fleshy, dark green, ribbed stalk (peduncle).
- **Seeds:** Smooth, shiny and ovoid in shape, approximately 4.6 mm long.
- **Male flowers:** Found in small clusters (racemes) of 2 to 5 flowers. Each flower has a slender, slightly hairy (puberulous), bract-free stalk (peduncle) that ranges from 5 to 30 mm long. The flowers have pale yellow petals and two stamens each.
- **Female flowers:** Appear singly, each on a stalk (peduncle) around 28 mm long.
- **Roots:** Thick, woody, tuber-like and perennial in nature.



Fig. 1. Morphology of *M. cymbalaria* plant

Therapeutic Applications of various parts of *Momordica cymbalaria* plant

Plant Part	Medicinal Uses
Fruit	<ul style="list-style-type: none"> - Controls blood sugar (anti-diabetic) - Reduces cholesterol - Acts as an antioxidant
Leaves	<ul style="list-style-type: none"> - Heals wounds - Reduces inflammation - Protects the liver
Roots	- Used in traditional medicine to treat diabetes and liver problems
Seeds	- Studied for anti-diabetic and fertility effects
Whole plant	- Sometimes used in herbal extracts for general health and wellness



Fig. 2. 1-Flower, 2-Fruits and 3-Tuberous roots of *M. cymbalaria* plant

Nutritional value of *Momordica cymbalaria* per 100g fresh weight

Nutrient	Amount
Moisture	87-92 g
Energy	20-32 kcal
Carbohydrates	3-5 g
Protein	1.5-3 g
Fat	0.2-0.4 g
Fiber	2-3 g
Calcium	25-45 mg
Iron	1.5-2.8 mg
Vitamin C	25-50 mg
Beta-carotene	150-300 µg
Potassium	150-250 mg

Medicinal Uses of *Momordica cymbalaria*:

1. Anti-diabetic activity

- It helps reduce blood sugar levels.
- Useful in managing diabetes, especially type 2.

2. Antioxidant properties

- Protects the body from damage caused by harmful molecules (free radicals).

- Helps slow aging and prevent diseases.

3. Liver protection

- Helps protect the liver from damage due to harmful chemicals or drugs.

4. Anti-inflammatory effects

- Reduces swelling and pain in the body.

5. Cholesterol-lowering ability

- Helps reduce bad cholesterol levels.
- Keeps the heart healthy.

6. Fertility and reproductive health

- Has been shown to affect reproductive hormones.
- May be useful in treating fertility-related issues (studies mostly in animals).

7. Cancer-related studies

- Some early studies suggest it might help stop the growth of certain cancer cells.

8. Wound healing

- Aids in faster healing of wounds.

Future Prospects

Athalakai belonging to the native to Tamil Nadu's dry tracts, holds promise for developing climate-resilient, nutritionally rich vegetable varieties. It can be utilized in breeding programs for drought tolerance and medicinal traits relevant to local agro-ecological conditions. With proper varietal development, it can enhance crop diversification and farmer income in Tamil Nadu's marginal farming systems.

Conclusion

Athalakai is a neglected yet promising cucurbit with diverse therapeutic and nutritional applications. Native to Tamil Nadu and adapted to local conditions, it holds immense potential for inclusion in sustainable farming systems and rural health initiatives. With systematic efforts in research, cultivation and awareness-building, Athalakai can be transformed from a wild herb into a commercially viable medicinal crop, benefiting farmers and the healthcare system alike.

References

Jeyadevi, R. A., Sivasudha, T., Rameshkumar, A., Sangeetha, B., Ananth, D. A., & Aseervatham, G. S. B. (2012). Nutritional constituents and medicinal values of *Momordica cymbalaria*

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| (Athalakkai)-A review. Asian Pacific Journal of Tropical Biomedicine, 2(1), S456-S461. | Genetic Resources and Crop Evolution, 68, 3427-3433. |
| Chinthan, K. N., Manjunathagowda, D. C., Rathod, V., Devan, S. R., & Anjanappa, M. (2021). Karchikai (<i>Momordica cymbalaria</i> Hook f.): an untapped cucurbit indigenous to India. | Rajamanickam, C., & Arunachalam, P. (2024). Evaluation of underutilized vegetable <i>Momordica cymbalaria</i> accessions for growth, yield and quality parameters. Journal of Eco-friendly Agriculture, 19(2), 359-363. |
