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# A REVIEW ON GARCINIA CAMBOGIA FRUIT USED IN WEIGHT LOSS

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## ABSTRACT

Garcinia gummigutta, also known as Garcinia cambogia, it can be shown to have an excellent property and many health conditions. The use of Garcinia cambogia in traditional medicine has involved treating gastrointestinal, intestinal parasites, digestive disturbances, among other ethnobotanical applications. The hydroxycitric acid (HCA), the main organic acid present in the fruit rind, increasing fat oxidation, and reducing do novo lipogenesis. HCA is a strong inhibitor of the enzyme adenosine triphosphate citrate lyase, which converts the citrate to acetyl co enzyme A, for the synthesis of fatty acid, alcohol. In in vitro and in vivo models, the plants crude extract or components also have anti-cholinesterase, anti-inflammatory, and anti-cancer effects. The Garcinia cambogia dietary supplements available for weight loss. Nowadays, overweight and obesity are worldwide epidemics associated with the development of diseases such as diabetes, dyslipidaemias, hypertension and even cancer. Garcinia cambogia is used in Asia and Africa for anti-diabetic and anti- obesity purposes while Glucomannan (GNN) is a diet supplement used to control weight loss in Japan and China.

**KEYWORDS:** Garcinia cambogia fruit, Control weight loss, Hydroxy citric acid, Anti-inflammatory, Cholesterol.

## INTRODUCTION

The Garcinia cambogia fruit is native to India and Southeast Asia as and is marketed as a natural weight loss fruit. Garcinia cambogia fruit is commonly used in supplement forms like

capsules, extracts, tablets etc. The most widely compound in garcinia cambogia is hydroxy citric acid (HCA), an organic acid and form of citric acid. Hydroxy citric acid (HCA), the major organic acid occurring in the fruit and its main active constituent, HCA has shown its anti-obesity effect by multiple mechanisms where it reduces food intake as it regulates serotonin levels which controls satiety by inducing an appetite suppressant effect.

This fruit reduces weight gain by the inhibition of the enzyme adenosine triphosphate citrate lyase which catalyse the extra mitochondrial cleavage of citrate into acetyl- co A, where acetyl co-A is abuilding block of fatty acid synthesis, hence inhibition of fatty acids synthesis; additionally, HCA decreased de novo lipogenesis and increased fat oxidation.

## SYNONYM

Garcinia cambogia, garcinia gummi-gutta, Malabar mango, Malabar tamarind, red Malabar, (scientific name brindle berry)

## BIOLOGICAL SOURCES

The Garcinia cambogia fruit is a rich source of a hydroxy citric acid, the active agent acid in weight loss by inhibiting fat production and suppressing appetite belonging to the family Guttiferae.

## GEOGRAPHICAL SOURCES

This fruit is grown in Indonesia, India, Sri Lanka, Malaysia and part of Africa.

## CHARACTERISTICS

**Fig. 1: Garcinia cambogia fruit.**

**Colour:** Green, yellow and red

**Odour:** Nontoxic, tasteless, odourless

**Taste:** Sharp sour taste

**Shape:** Small pumpkin- shaped

**Size:** 3cm in diameter

**Solubility:** Soluble in water and insoluble in alcohol.

## CHEMICAL CONSTITUENTS

- Garcinia cambogia contains 30% to 50% hydroxy citric acid (HCA).
- Every 100 grams of rind approximately contains carbohydrates 17.2gm of, fat 0.5g, of proteins 2.3gm of, fibre 1.24gm, 15.14mg of iron, 250mg of calcium, 10mg of ascorbic acid and 18.10mg of oxalic acid.

## CHEMICAL STRUCTURE

- ✓ Hydroxycitric acid is a derivative of citric acid that is found in a variety of tropical plants including Garcinia cambogia.
- ✓ To reduce the conversion of carbohydrates into stored fat by inhibiting certain enzyme processes.
- ✓ It inhibits adenosine triphosphate citrate lyase and it has been used in the treatment of obesity.
- ✓ The active ingredient in the fruit rind, hydroxycitric acid appears to block the enzyme called citrate lyase.
- ✓ Hydroxycitric acid also increases hepatic glycogen synthesis, and decreases body weight gain.

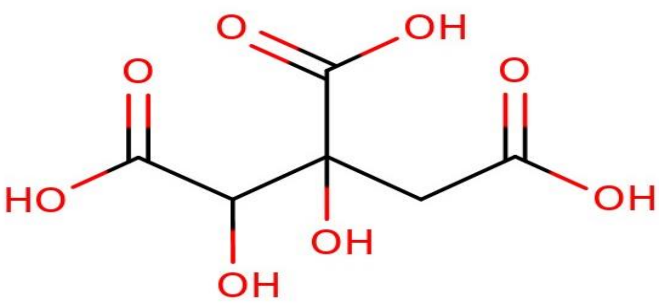


**Fig. 2: Hydroxy citric acid.**

## SEED PROPAGATION

Peel the coats of the 2-inch seeds to reveal the white cotyledon. Repeat for each seed yours preparing to plant.

↓

Immerse those cotyledons in a mixture of 550 ppm gibberellin and water. Keep submerged for 12hrs.

↓

Keep the seed-raising mix damp and warm. Expect the seed to take 3 weeks to 3 months to germinate. Place the cotyledons in a water-based container for faster germination.

↓

Keep the seedlings watered, fertilized once they take hold. When they are strong enough, separate and plant then in separate containers or in the garden. Expect fruit in about seven to 12 years; this is a slow process.

**Fig. 3: Germination of garcinia cambogia fruit.**

## MECHANISM OF ACTION

Garcinia cambogia fruit

↓

CAH from Garcinia cambogia oil inhibits ATP citratelyase to enter the cycle resulting in reaction of acetyl COA

↓

Glucose

↓

Mitochondrial citrate

↓

Acetyl COA

↓

Reduction of Acetyl COA

↓

Increase Lipidogenesis

Decrease Glucose Oxidation

Increase Beta- Fat oxidation

## EXTRACTION

### Extraction Method of Garcinia cambogia

**Fig. 4: Extraction of Garcinia cambogia fruit.**

### Raw material

The powdered sample of Garcinia cambogia fruit weigh the 5grams. 50ml of water was added and refluxed for 30min at temperature 600 to 700C.

### Extraction method of Garcinia cambogia

The air-dried powdered sample of Garcinia cambogia was passed through 20 mesh and 100 gm weighed and extracted three times with 400ml of 85% Methanol for 3hrs at 60C.

Extract was filtered and the above process was repeated 3 times. All the extracts were were combined and concentrated by distillation thick paste was attained, it kept under room temperature for 24 hours filtered and reflects with 10% charcoal for 1hr further filtered

through vacuum filtered and kept at room temperature after cooling, 10% of calcium salt according to filtrate was added and stirred for 5 to 10 mins.

**Preparation of stock and calibration of standard solution**

Standard solution of pure HCA was prepared by dissolving 2.0mg in 20ml of HPLC grade water in a volumetric flask. For the determination of limit of detection (LOD) and limit of quantification (LOQ), 2ml of the stock solution was diluted to 10ml.

**Preparation of sample solution**

Approx. 50 mg sample powder was taken and dissolved in15 ml HPLC grade water shaking for 20 min after shaking the volume was made up to 50ml with HPLC grade water filtered through 0.45micro grams membrane filter.

**Garcinia cambogia extract**

- ✓ Hunger Control
- ✓ Increases Energy
- ✓ Anti- oxidants support
- ✓ Burn fat.

**PRECAUTIONS**

- ➢ Talk with healthcare provider before starting garcinia cambogia if you have any medical conditions.
- ➢ Some people should limit or avoid the use of garcinia cambogia.
- ➢ The safest thing to do is not give children garcinia cambogia until more research is available.
- ➢ Garcinia cambogia may also worsen depression or some form of mania.
- ➢ There have been reports of serious lover problems in some people who have taken products containing garcinia.
- ➢ It's recommended that people who are pregnant or breast-feeding avoid using garcinia cambogia.
- ➢ Garcinia cambogia may also worsen depression or some forms of mania. Additionally, garcinia cambogia may lower blood sugar, which could be unsafe for people with diabetes.

## TEST FOR WEIGHT LOSS

### ❖ BLOOD TEST FOR WEIGHT LOSS

- **Lipid panel:** It measures the amount of good and bad cholesterols.
- **Comprehensive metabolic panel:** It measures the quantities of electrolytes, enzymes and minerals in the body.
- Blood sugar and HbAQ1c test.
- Hormone testing for weight loss.
- Liver function test for weight loss.

### ❖ LABORATORY TEST FOR WEIGHT LOSS

- DNA & food sensitivity test for weight loss.
- Metabolism test for weight loss – it measures the number of calories.


**Fig 5: Garcinia cambogia capsule.**

## DOSAGES

- ✓ Generally, it is recommended to take 500 mg, three time per day, 30-60 minutes before meals.
- ✓ The weight loss supplements that have been safe for teenagers, but some times it's not safe.
- ✓ The fruit is safe to eat, and the supplements have helped many people's loss weight.
- ✓ If a person is considering taking garcinia cambogia as a supplement, they should research it will and discuss it with a doctor before starting.
- ✓ Keep it mind that natural products are not always necessarily safe and dosages can be important.

- **Garcinia capsule:** Take one two capsules once or twice daily as recommended by the physician.
- **Garcinia powder:** Take one table spoon full once or twice daily as a recommended by the physician.
- **Garcinia tablet:** Take one to two tablets once or twice daily as recommended by the physician.

**Fig 6: Garcinia Cambogia Fruit.**

**HEALTH BENEFITS**

- Prevent fat production.
- Controlling blood sugar.
- Anti-inflammatory properties.
- Digestive health.
- Lower cholesterol.
- May reduce your appetites.
- Anti-bacterial properties.
- Boosts energy.
- Prevents kidney stones.
- Diabetic property.
- May block fat production and reduce belly fat.
- Weight loss.
- Diuretic activity.
- Reduced craving for unhealthy foods, such as sugar addition.
- Increased energy and concentration.

- Stabilized blood sugar level.

## SIDE EFFECTS

➢ **Common side effects**

- Dizziness
- Dry mouth
- Headache
- Nausea & Heartburn

➢ **Severe side effects**

- Gastrointestinal
- Liver damage
- Eye pain
- Acute pancreatitis
- Psychosis.

## CONCLUSION

✓ It was concluded that treatment with garcinia cambogia is useful in the long term to reduce weight and improve the metabolic status of overweight patients.

✓ The HCA in garcinia cambogia has been found to boost the fat-burning potential of the body.

✓ The garcinia cambogia extract inhibits the onset of oxidative stress. It also suppresses the activity of reactive oxygen species thus reduce oxidative stress.

✓ Weight loss property of garcinia cambogia is mainly used to the presence of an active component called hydroxy citric acid.

✓ The potential benefits of these fruit rind have in human health and illness are required for detailed mechanical studies.

✓ Several other components of different plants with different therapeutic functionalities have been isolated such as appetite supplement, anti-obesity, anti-microbial, anti-cancer, anti-hyperlipidaemic activity.

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