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Hoodia gordonii (African plant), *Caralluma fimbriata and Achyranthes aspera* (Indian plants): An appetite suppressant

Boni Topiwala, R.Krishnamurthy*

C.G Bhakta Institute of Biotechnology, Maliba Campus, Uka Tarsadia University, Mahuva Road, Bardoli- 394601, Surat, Gujarat, (INDIA)

E-mail : krishnamurthy@utu.ac.in; krishnashanti@gmail.com

ABSTRACT

Achyranthes aspera, *Caralluma fimbriata* an Indian origin plant and *Hoodia gordonii*, an African origin plant, an incredible natural flora for reducing the voracious hunger and an intimate way to reduce the stoutness. The phytochemical constitute is the eventual innate boon in the both the plants and the pupil claim to overcome their appetite. A miraculous discovery that had lead to reduce hunger in the poor people from starving crisis.

KEYWORDS

Achyranthes aspera;
Caralluma fimbriata;
Hoodia gordonii;
Appetite suppressant;
Phytochemical constituents.

INTRODUCTION

"Now good digestion wait on appetite, And health on both!"

-William Shakespeare (Macbeth)

Wisely said proverb, fitness and hunger are the foremost need of living beings. It's the most vital need to withstand existence. Water is the primary need to lessen hunger, but one can only get energy through food. At the war time for the soldiers at the border and for the astronauts to endure at the outer space for more than a month, not only for them but for the people below the poverty line who cannot get sufficient food and results into starvations. Prevail over the obesity, for one's mass defeat. Thus, for them maybe the natural plant sources *Caralluma fimbriata* and *Hoodia gordonii* could be the alternative source for the survival. According, to French, says 'bon appétit' good wishes for the excellent foodstuff and for one's hale and hearty life.

ACHYRANTHES ASPERA (APAMARGA)

Morphology

It is an erect herb. Widely distributed in Northern part of India and is widely used as a folk medicine, Southern India and in the some areas for Gujarat. It mainly grows in the season of Monsoon. The leaf of the plant appears to wrinkled shape or broadly rhombate. Stem is rectangular shape and inflorescence appears on the lateral sides. The flower color is purplish red[1].

Consumed as food

In many of the rural countries of India, Achyranthes aspera seed is mostly consumed for reducing hunger or is mainly consumed before going on the fasting[40,50].

In certain areas seed are been cooked like rice and by adding milk it is been cooked. The very famous

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Indian cuisine "kheer" is been prepared. Consumed mainly by yogis before going on the relevant fasting. It provides energy and makes one's fill full.

TABLE 1 : General information of *Achyranthes aspera*[22]

Essential Information	
Plant type	Erect Herb, Weed
Family	Amaranthaceae
Local name	Chirchita (Hindi) Aghedi (gujarati) Apang (bengali) Nayurivi (tamil)
Botanical name	Achyranthes aspera
Flowering	June-September

Phytochemical constituent

A seed of this plant mainly contains saponin A and saponin B, mainly are the glycosides of the oleanolic acid. The carbohydrates components present it are the sugars like D-glucose, L-rhamnoes, and L-glucuronic acid[13].

In the unripe seeds it contains oleanolic acid, saponines, amino acids and hentriacontane a long chain of carbohydrate[1].

Root contains ecdysterone and oleanolic acid[1].

Stem and shoot contains aliphatic dihydroxyketone 36,37 dihydroxyhenpantacontan- 4- on and triacontanol was been found. Two long chain compounds, isolated from the shoots, have been characterized as 27-cyclohexylheptacosan-7-ol and 16-hydroxy.26-methylheptacosan-2- on by chemical and spectral investigations[1].

Medicinal uses

Clinically not proved

Its ground roots along with the water are been given to a person for snake bite. Till the person vomits out the snakes poison. Roots are been also used as a tooth brush.

Crushed leaves rubbed on aching back to cure strained backs. Seven leaves, crushed, and taken as a single dose twice a week, -on Tuesday and Sunday, can effectively treat the bite of a dog, if delivered within 21 days after the bite[19,41-43].

Treatment of diarrhea

The fresh leaves juice should be given to the person suffering from diarrhea in every third hour[17].

Treatment of hunger

There were studies done on the Rats, in these the Rats were actually fasted for 18 hours and access to food for only 6 hours. Some of the Rats were treated normally without fastening. Water was available ad libitum. Rats were divided into five groups of MEARFAA (Methanol extract of Alkaloid rich fraction of seeds of *Achyranthes aspera),* Subutramine and Vehicle control. 1 hours before the food kept in the cage and after 1 hour the food consumed was checked[20].

It was noted that the food intake after 18 hour, it decreases the consumption of food in MEARFAA and Subutramine it was noted[20].

Toxic effect

There had been toxic effect noted in *Achyranthes aspera,* cardiac toxicity, hypotension and bradycardia[12].

CARALLUMA FIMBRIATA (INDIAN CACTUS)

Morphology

Caralluma fimbriata is found mainly in Andhra Pradesh, Warangal, and in some of the parts of India. It is an erect branched herb and is 20-30 cm tall. Its stem is leafless, fleshy green and narrowing to the point. It contains leaves only at the younger branches soon they fall off and create a tooth like protuberance on the angles. Flowers mainly develop at the end of the branches. 1or many flowers collectively are present on a short stalk. Petals are narrow, purple or black in color, yellow or red in color and at the margins minute hairs are present. It's a roadside shrub or boundary markers, and found in Peninsular India.

Consumed as food

In the rural regions of India it's been widely consumed not from now, but from the centuries. Guzzle mainly as raw, as vegetable along with the spices and also been preserved in chutneys and pickles. Central aspect of it is a thirst quencher when one goes on the tracking or hunting. It has an ability to restrain appetite and augment strength. It is also known as "Famine Food" in India[6].

These plant could be grown outdoor in the warmer and drier part, also can be grown in Greenhouses.

Caralluma is mainly been manufactured by the Slimluma[Tm], and their various products are available in the market, for losing weight[30].

TABLE 2 : General information of *Caralluma fimbriata*[6]

Essential Information	
Plant type	Succulent
Family	Asclepiadaceae (Milkweed family)
Local name	Kullee mooliyan (Tamil)
	Kaarallamu (Telegu)
	Yugmaphallottama (Sanskrit)
	Makad sheguli (Marathi)
Botanical name	*Caralluma fimbriata*

Phytochemical constituents

The major constituent in *Caralluma fimbriata* is Pregnane Glycoside, Flavone Glycoside, Megastigmane Glycoside, and Saponin, some of the active components includes: Caratuberside A and B, Bouceroside I, II, III, IV, V,VI, VII, VIII, IX, and X, Tomentogenin, Sitosterol, Luteolin-4-neohesperidoside and Kaempferol-7-0-neohesperidoside[30].

Mechanism of action

Caralluma fimbriata helps in burn down of fat, reduce appetite and also for the poor muscle development. It inhibits the Citrate lyase enzyme, thus has an outcome our body bring to a standstill to produce Fat.

Another enzyme which it inhibits is Malonyl Coenzyme A. It helps in burn down of fat which is been reserved, thus helps in losing of chubbiness[27].

Medicinal uses

Caralluma fimbriata is being mainly used in Digestive aid, Reduce appetite, and Weight loss.

Treatment of diabetes

It has been reported that it reduce blood glucose in normal and alloxan diabetic rat. It has anti-oxidant property thus it can be used to the treatment of Diabetes mellitus[30].

Reduce weight and obesity

A randomized clinical trial was conducted, on a double-blind, Placebo-controlled, the *Caralluma fimbriata* extract were given to 50 human. For the obesity trial, 26 overweight patients were treated with the *Caralluma fimbriata* extract, 19 on active compound and 7 on placebo compound, about for 4 weeks these was continued.

Accordance to the observance, it was noted that it was well tolerated, nominal side-effects and loss of weight[23,27].

Appetite suppressant

It was also noted from the clinical trial it reduces Hunger, urge of eat and persist fullness[23,27].

HOODIA GORDONII (AFRICAN CACTUS)

Morphology

The flowers of these plant are not much eye-catching and smells similar to putrid meat. Flowers primarily appear at the edge of the stem. It appears much like cactus but it is an succulent plant, it is spiny and leafless plant.

TABLE 3 : General information of *Hoodia gordonii*[14]

Essential Information	
Plant type	Succulent
Family	Asclepiadaceae
Local Name	Bushman's hat
	Queen of the Namib
	Xhoba
BotanicalName	*Hoodia gordonii*
Flowering	*August – September*
Distribution	Kalahari Desert of South Africa and Namibia
Part used	Stem

Consumed as food

Hoodia gordonii is been for the most part of the Southern Africa chiefly found at Kalihari Desert, as it is their customary plant for the local tribal people used from the prehistoric age. The clannish people whenever go for hunting they generally rely on these plant to stifle their food shortage[13,17].

The herbal medicine commonly called "Hoodia" may be a viable alternative, and many Hoodia-containing preparations have been extensively marketed. More than 100 products have been marketed in formulations

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ranging from tablets and tinctures to protein shakes and lollipops[3].

Phytochemical constituents

The main costituent in *Hoodia gordonii* is Pregnane glycoside, same constituent found in *Caralluma fimbriata.* Steroid glycosides, Fatty scids, Plant sterols, saponin and polar organic materials[3].

Mechanism of action

The P57 molecule stimulate the brain and gives the signal that you are already full, though one has not eaten. Its because of hypothalamus a part of our brain, and the nerve cell senses the glucose sugar molecules in blood and due to these phenomenom one feels full. The molecule present in Hoodia is 10,000 times active as compared to glucose[3].

Medicinal uses

Mainly used in reducing weight or can be said to reduce hunger[44,45].

From the recent research studies it was found that the main constitute responsible for the weight reduction is Pregnane Glycosides, it was also found that the Glycoside have two active compound 1 and 2. With the help of column chromatography technique these compounds were isolated from Hoodia gordonii and other speices of Hoodia.

Though some countries it has been approved and mainly consumed in the form of template drug manufacturing and more over it is been consumed with the other dietary supplements.

In US, still there are issuse regarding Hoodia as an commercial diet. FDA had still not approved Hoodia speices, from the day till now there are controversies regarding it consumption[3,35].

Clinical trial

Many clinical trials were conducted and surveys were made.

The clinical trial was been carried out in Houston, Texas[35], with the aim of reducing Obesity. 8 obese individual, 2 male and 6 female weight about average 49 years. Dietary Supplement Hoodia Supreme® (www.naturesbenefit.com), Average dose was 500mg without any prescription well alloted and it was proved that it reduce the obesity nearly about nine pounds, in four weeks period.

One of the other survey done by Richard M. Goldfarb, MD, and his colleagues, they carried out their survey over 7 obese people, body mass index greater than 25. Without changing their daily diet, for 28 days. They received Hoodia gordonii, in encapsulated Hoodia powder[9]. It was noted that the average body weight was nearly about 3.3%, and the median weight loss of ten pounds, in 28 days period was studied[11].

Toxic effect

There were no ill effects and reduction in calorie intake was reported, in both the above surveys[11].

The folklore history of the use of *Hoodia gordonii* as an appetite suppressant has been confirmed in several animal and human observations[28,29,39,46].

Thus, it was proved that Hoodia gordonii, can be taken in daily dietary supplements for "Reducing or in the Treatment of Obesity"[11].

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