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A REVIEW ON CARALLUMA FIMBRIATA:- PHRAMCOLOGICAL ACTIVITY

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ABSTRACT

Caralluma fimbriata of flowering plants in the family Apocynaceae, consisting of about 120 species. In 1795 William Roxburgh published the name Stapelia adscendens for a plant found in India. He commented that the name for the plant in the Telugu language was Car-allum and that the succulent branches are edible raw, though bitter and salty.The name Caralluma was coined by Robert Brown for a new genus in an article published in 1811. At the time he only described one species in the genus, the plant that he renamed Caralluma adscendens. In 1996 Helmut Genaust published the suggestion that it was sensible to conclude that the generic name is derived from the Arabic phrase qahr al-luhum, meaning "wound in the flesh" or "abscess," referring to the floral odour.Genaust was unaware that the genus Caralluma existed east of Palestine. He specifically ruled out its existence in India,where it was first described and named. Genaust presumed that the name would have first been applied to Caralluma europaea in North Africa.[4] In Italy it is present only on the island of Lampedusa in Sicily.Most of the species occur in Africa, including several taxa valued by people for their medicinal properties. Caralluma fimbriata (CF) has been used as an appetite suppressant herb for millennia. It also has antioxidant, antidiabetic, and nootropic actions. It is proved that it is a natural antiobesogenic agent and is widely consumed in India. It's actions like anti-artherosclerotic and analgesic is of high medicinal value. The objective of this article is to highlight various uses of CF along with its use in medical problems.

Keyword: Carullum Fimbriata,Medicinal Herbs, Phytochemicals, Pharmacognosy, Pharmacological Activities.

I. INTRODUCTION

Caralluma fimbriata Wall. an edible succulent cactus is a perennial herb growing in dry parts of Tamil Nadu, India. It belongs to the family Apocynaceae is also a well known as Famine Food, Appetite Suppressant & thirst quencher among tribal population. Genus Caralluma comprises about 200 genera & 2500 species1. It grows wild all over India & is also planted as a roadside shrub& boundary marker in gardens. Several members of the genus Caralluma have found medicinal uses in the treatment of Rheumatism, Diabetes, Leprosy, Antiseptics & Disinfectants.The species of Caralluma found in India are edible and form part of the traditional medicine system of the country. Caralluma fimbriata is listed in The Wealth of India (1992) as medicinal plant used as an appetite suppressant and has also been used to treat diabetic,pain, fever,and inflammation. Native Indian diets over many centuries have included these edible wild succulent cacti, with claims in folklore about its Appetite Suppressant Activity. An investigation was carried out to find out the effect of Caralluma fimbriata extract on appetite, food intake and anthrometry in adult Indianmen and women3. The extract of Caralluma fimbriata in the form of capsules, has been released under the trade name GENASLIM forbody weight control.Phytochemicals in fruits, vegetable, spices and traditional herbal medicinal plants have been found to play protective role against many human chronic diseases including cancer and cardio vascular disease (CVD). Phytocomponents including phenolics,flavonoids, tannins proanthocyanidins and various plants or herbal extracts have been reported to be Radical Scavengers and inhibitors of Lipid Peroxidation4.When Phytochemicals compounds react with a free radical, it is the delocalization of the gained electron over the phenolic antioxidant and the aromatic nucleus,that prevents the continuation of the free radical chain reaction. This is often called "Radical Scavenging". But polyphenolic compounds inhibit oxidation through a variety of mechanisms5.Due to uniqueness of curing different ailments this whole plant was selected for the study. Hence the present investigation was carried out to determine the possible phytochemical components from Caralluma fimbriata Wall. and to analyze the potent bioactive compound by GC-MS.

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Vernacular names:-

•English :- Caralluma

•Kannad :- Maakada singi, mangana kodu

•Marathi :- Makad Shing

•Tamil :- Kullee Mooliyan, Kallimudayan

•Telegu :- Kaarallamu, Kundelu kommulu

•Sanskrit:- Yugmaphallottama

Fig:- Carulluma fimbrita

》 **Selected species:**

•Caralluma adscendens (also called Caralluma fimbriata) (Roxb.) R.Br.

•Caralluma burchardii N.E.Br.

•Caralluma crenulata Wall.

•Caralluma dummeri

•Caralluma edulis (Edgew.) Benth. ex Hook.f.

•Caralluma europaea (Guss.)

•Caralluma joannis Maire

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•Caralluma russeliana (Courbai ex Brongn.) Cufod.

•Caralluma socotrana

•Caralluma somalica N.E.Br.

•Caralluma speciosa (N.E.Br.) N.E.Br

》 **fimbriata: An Edible Wild Medicinal Plant:-**

A) The use of many indigenous medicinal plants is recommended by the WHO owing to their accessibility, affordability, and fewer adverse effects. Britain was the first to cultivate C. fimbriata formally in 1830. Unfortunately, authorities and agricultural entities continue to disregard or overlook the production/cultivation of such wild plants. Furthermore, as a result of overexploitation by the pharmaceutical industry, agriculture, mining, and fodder lopping, these plants are fast disappearing and may become extinct in the near future [15]. Therefore,to meet the global functional food and nutraceutical industry demands, new powerful strategies are required to end this threatening decline .C. adscendens var. fimbriata, commonly known as C. fimbriata , is locally known as “Choong” or “Choonga” and “Kalli moolian” or” Karallamu” in Pakistan and India, respectively. It is a resilient roadside shrub with cactus-like leaves and is well known in Ayurvedic medicine. The plant is about 20-30 cm tall, erect, branching herb with leafless four-angled green stem tapered to the tips. Its leaves are small that only appear on young branches and fall off quickly leaving spiky projections. Flowers bloom either singly or in groups at the ends of branches on short stalks. Its flowers are 2cm in diameter, with small petals of purple color marked with golden and hairy borders Natural bioactive supplements are becoming increasingly popular for weight reduction, and C. fimbriata is currently regarded as one such functional plant that has exhibited potential outcomes .

B) fimbriata is an edible wild medicinal plant that grows in dry areas and is known as “famine food” by tribal Indians. Traditionally, it is eaten as a pickle or vegetable. Through appropriate selection and climate adjustments, this wild plant can be easily adapted for its large-scale cultivation . History has reported its use during long hunting periods since hunting tribes in the form of chewable portions or chunks of the C. fimbriata to suppress hunger and quench thirst. No incidence of adverse effects has been reported after the use of C. fimbriata in the Indian subcontinent . It contains pregnane glycosides that are known to suppress hunger and increase endurance. The plant has been studied for its antihyperglycemic and hypolipidemic properties, as well as hepatoprotective and antioxidant activities, yielding significant results.It is also used to treat pain, fever, and inflammation. The plant is commonly consumed by ethnic populations of Central India to manage obesity. It also stimulates the central nervous system, and its therapeutic benefits are attributable to the pregnane group of glycosides found abundantly in them . Flavone glycosides, pregnane glycosides, saponins, triterpenoids, and other flavonoids are important phytochemical constituents of C. fimbriata that have been studied against various pathological conditions and metabolic disorders. Pregnane glycosides are the secondary metabolites of C. fimbriata that are the steroidal compounds conjugated with sugar moiety .They are related to altered lipid metabolism and inhibit the synthesis of fatty acids They also act on the hypothalamus and cortisol, causing a feling of fullness, thereby reducing hunger, and are most likely responsible for appetite suppression.. This occurs without any side effects compared to the known appetite suppressant drugs. fimbriata extract (CFE) is commercially available in several countries including Australia and New Zealand. CFE has been granted generally recognized as safe (GRAS) classification for use as a nutraceutical in the fight against the world’s most significant public health problem (i.e., obesity) . For example, GenaSlim is a brand of CFE that has been approved for weight loss programs.

C) The use of CFE as a therapeutic intervention is well known in Ayurvedic medicine .CFE can also be used as a natural antioxidant . Other therapeutic applications of CFE reported in the literature include carminative, febrifugal, anthelmintic, antirheumatic, anti-inflammatory, antinociceptive, and antioxidant actions. Therefore, CFE could serve as an appropriate chemically tested, safe, and effective appetite suppressant resulting in weight loss, blood glucose, and lipid reduction. In addition, it has been used against malaria, hyperglycemia, ulcers, cancers, and other diseases. Future research for antiobesity and appetite-suppressant medications and nutraceuticals should focus on this significant phytochemical-pregnane glycoside . It has been known to have hypolipidemic, antioxidant, hepatoprotective, antiobesogenic, and anticancer properties with few side effects.In the Indian Health Ministry’s comprehensive compilation of medicinal plants, it is listed as a vegetable .Also, it is

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classified as famine food, hunger suppressor, and thirst quencher in Indian Materia Medica . Its aerial parts are traditionally used as a culinary herb and cooked with meat during the winter. For decades, tribal communities in India have consumed this as a traditional vegetable alternative. CFE is also largely available and easy to consume despite its bitter taste. Its safety and toxicity profile has been thoroughly investigated [30]. While in the semiarid areas of Pakistan, its species have been used as emergency food for centuries .C. fimbriata's dietary or supplemental utilization.

II. PHARMACOLOGY

Different forms of caralluma are used to treat rheumatism, diabetes, leprosy, antipyretic and anthelmintic action, tumors, fungal infections, snake bites, scorpion bites, and ant nociceptive activity. In India's traditional medicinal system, antibacterial, antifungal, analgesic, anti-inflammatory,antimutagenic,hyperpolipide,hyperglycemic ,antioxidant, antibacterial, and antifungal properties have been proven.

1] Apetite suppressant:-

Caralluma is used as an apetite supressor and can be used as
supplement for reducing weight. Caralluma contains pregnane
glycosides, a class of naturally occurring compounds thought to inhibit the formation of fat.show that supplementation with Caralluma fimbriata can lead to a clinically meaningful reduction in central adiposity, a key component of metabolic syndrome associated with other risk factors such as elevated blood pressure and cardiovascular disease Although very little is known about the safety of using caralluma on long term.

2] Anti diabetic action:-

Through a study on effect of methanol extract of Caralluma
fimbriata (MCF) on streptatozocin (STZ) 50 mg/kg b.w. induced diabetic rats proved that the methanolic extract of Caralluma fimbriata significantly controlled the diabetic condition including oxidative stress in liver and kidney. This finding has a significant role in maintaining the health of individual in the modern life style and food habits, where diabetes is a constant companion of mankind.

3] Anti- inflammatory activity:

The extract of Caralluma fimbriata has been studied for its anti-inflammatory properties. The anti-inflammatory action was tested using the Carageenan induced paw edoema paradigm, which showed that mice treated with the testing drug plus standard indomethacin had considerably less inflammation than those in the carageenan induced inflammatory positive control group. Paw edoema caused by incarrageenan in a dose-dependent way, Caralluma fimbriata greatly reduced edoema.

III. CARALLUMA FIMBRIATA (INDIAN CACTUS):

Mechanism of action:

Caralluma fimbriata helps in burn down of fat, reduce appetite and also for the poor muscle

development.It inhibitstheCitrate lyase enzyme, thus has an outcome our bodybringto a standstillto produce Fat.Another enzyme which it inhibits is Malonyl CoenzymeA.It helpsin burn down offatwhichis been reserved, thus helpsin losing of chubbiness

Morphology:-

Caralluma, a cactus plant belongs to family Asclepiadaceae is a succulent, perennial herb, grow to aheight of 1 to 10 ft and grow in different regions of India. The members of genus Caralluma are erect andfleshy. They have quadrangular stem, devoid of leaves and small flowers in several varieties of dark colour.The species of Caralluma found in India are edible and form a part of traditional medical system of country.

Traditional uses:

C.fimbriata has been in use since centuries in India.It is commonly used as a vegetable in several regions of India. It is eaten raw or cooked with spices,it is also used in pickles day's hunt. The cactus is used among the labor class in South India to suppress appetite and enhance endurance.In the Kolli hills of South India, C.fimbriata is a vegetable used daily. In the arid regions of AndhraPradesh, C.fimbriata is used in pickles and chutneys.In Western India, C.fimbriatais well known as a faminefood, appetite suppressant and thirst quencher. The green folliclesareeaten, boiled and salted.In Kerala, South India,C. fimbriatais used as a vegetable and

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appetite suppressant among tribal populations-It also finds use today as an appetite suppressant and famine food during times of famine, in the semi-arid regions of India.Wealth of India, the Indian Health Ministry's comprehensive compilation on medicinal plants, lists Caralluma fimbriata as a vegetable, used in Curries, pickles or raw eaten.

》 **Ayurvedic preparation:-**

Phytochemistry:-

Species of caralluma have pregnane glycosides , stogmasterol and other further constituents which are well known for the array of biological activities and pocess antimicrobial, antidiabetic, antioxidant etc. Saponins and flavonoids and predominantly found in Caralluma show in great interest because of the wide range of immune stimulating activities. This succulent Cactus contain glycosides, hydrocarbons, Saponins as major phytoconstituents and reported for various biological activities such as rheumatism, diabetes, leprosy, antinociceptive, antipyretic, anti-helminthetic, antiobesity activities.

Medicinal uses:

•Clinically not proved Its ground roots alongwith thewater are been given

•to a person forsnake 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 effectivelytreatthe bite of a dog,if deliveredwithin 21 days after the bite.Caralluma fimbriata is being mainly used in Digestive aid,Reduce appetite, andWeight loss.

》 **Treatment** :-

Treatment of diarrhea:-

The fresh leavesjuice should be givento the person suffering fromdiarrhea in everythird hour.

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 ofAlkaloid rich fraction of seeds of Achyranthes aspera),Subutramine andVehicle control. 1 hours before the food kept in the cage and after 1 hour the food consumed was checked. It was noted that the food intake after 18 hour, it decreasesthe consumption offood inMEARFAAand Subutramine itwas noted.

》 **Clinical trial:-**

Many clinical trials were conducted and surveys were made. The clinical trial was been carried out in Houston, Texas ,with the aim of reducing Obesity. 8 obese individual, 2male and 6 female weight about average 49 years. Dietary Supplement Hoodia Supreme

(www.naturesbenefit.com),Average dose was 500mg without anyprescriptionwell alloted and itwas 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,theycarried outtheir survey over 7 obese people, bodymassindex greater than Without changing their dailydiet,for 28 days.They received Hoodiagordonii ,inencapsulated Hoodia powder. 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 wasstudied.

Toxic effect:-

There had been toxic effect noted in Achyranthes aspera, cardiac toxicity, hypotension and bradycardia

Overview:

Caralluma is a succulent plant (cactus) from India. In India it grows wild and is often used as a border in gardens and as a roadside shrub. It is also found in the wild in Africa, Saudi Arabia, Canary Islands, Afghanistan, and Southern Europe.Traditionally, Indian tribes chewed chunks of caralluma to keep from being hungry during

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a long hunt. These days, a solution that contains chemicals taken from the plant (extract) is used to decrease appetite for weight loss. It is also used to quench thirst and to increase endurance.In foods in India, caralluma is cooked as a vegetable and is used in preserves such as chutneys and pickles. It is also eaten raw.

Uses:

•Insufficient Evidence to Rate Effectiveness for...

•Weight loss and obesity.

•Developing evidence suggests that taking a caralluma extract for 60 days might decrease waistline, feelings of hunger, and fat and calorie intake. But it does not seem to decrease weight, body mass index (BMI), body fat, or hip measurements.

•Quenching thirst.

•Increasing endurance.

•Other conditions.

Side Effects:

Caralluma seems to be safe for most people when 500 mg of the extract is taken twice daily for up to 60 days. The long-term safety is not known. Caralluma might cause some mild side effects such as stomach upset, intestinal gas, constipation, and stomach pain. These side effects usually go away after a week of use.

Precautions:-

•Pregnancy and breast-feeding: Not enough is known about the use of caralluma during

•pregnancy and breast-feeding.

•Stay on the safe side and avoid use.

Dosing:-

The appropriate dose of caralluma depends on several factors such as the user's age, health, and several other conditions. At this time there is not enough scientific information to determine an appropriate range of doses for caralluma. Keep in mind that natural products are not always necessarily safe and dosages can be important. Be sure to follow relevant directions on product labels and consult your pharmacist or physician or other healthcare professional before using.

》 Safety and Tolerability/Toxicity Assessment:-

For human consumption, C. fimbriata is considered pharmacologically safe due to its natural occurrence and less toxicity. However, in some cases, it has been reported with no serious adverse effects by subjects of the study. The reported side effects were minor and limited to mild gastrointestinal symptoms such as constipation, flatulence, abdominal distention, and gastritis. All the above symptoms disappeared within a week, and the drug was shown to be nontoxic up to a dose of 2000 mg/kg. Hence, standardized extract of C. fimbriata was clinically tested and proven with no known side effects and was approved by TGA (Therapeutic Good Administration, Australia) . Similarly, a study was done to check the toxicological assessment of CFE at different doses of 100, 300, and 1000 mg/kg body weight for six months in Sprague Dawley rats. No treatment-related toxicity or deaths were seen up to the maximum dose .Another study was conducted to check the limitation of CFE, resulted in no reported adverse effects at the recommended dose of 1000 mg/kg .Moreover, an efficacy study revealed that it was found to be nontoxic even up to the dose of 2000 mg/kg body weight .

IV. CONCLUSION

The Caralluma genus comprises 260 species, and almost all of them have been considerably used for the treatment of various diseases. A large number of bioactive compounds like pregnane glycosides, megastigmane glycosides, alkaloids, quercetin, and flavone glycosides have been isolated from Caralluma species and used against obesity, diabetes, hypertension, ulcers, and cancer. One of these species, C. fimbriata, is an indigenous, wild, edible, succulent roadside shrub with cactus-like leaves. Exploration of the nutritional and nutraceutical potential of C. fimbriata has revealed significant bioactive constituents that have shown amelioration in cardiometabolic biomarkers, hyperglycemia, obesity, and appetite control. Hence, this neglected and underutilized vegetable should be more cultivated for its regular dietary utilization. The summarized data of this review has revealed that there is still very little work done on C. fimbriata. Therefore, more research on

such a hidden miraculous plant and its reported active biomolecules should be done to authenticate its GRAS status. Further phytochemical and pharmacological research with more work done on innovative ideas to incorporate CFE in diet or supplements should be done to address critical health concerns prevailing in developed as well as developing countries. As this plant still needs to get spotlighted in food and biomedical science, therefore, future investigations are welcomed to identify its therapeutic potential against different diseases either metabolic syndrome or not. Such studies can serve as a scientific baseline for designing a safer nutraceutical approach to these diseases.

V. REFERENCES

[1] "Genus: Caralluma R. Br". Germplasm Resources Information Network. United States Department of Agriculture. 2004-04-15. Archived from the original on 2012-10-09. Retrieved 2010-11-03.

[2] Roxburgh, William (1795). Plants of the Coast of Coromandel Volume I. Vol. v.1. George Nicol, Pall-Mall, London. pp. 28–29. Retrieved 2020-03-17.

[3] Brown, Robert (1811). "On the Asclepiadeæ". Memoirs of the Wernerian Natural History Society. I: 12–78. Retrieved 2020-03-17.

[4] Genaust, Helmut (1996). Etymologisches Wörterbuch der botanischen Pflanzennamen. Bi khäuser. ISBN 3764323906.

[5] Sudhakara G., Mallaiah P., Sreenivasulu N., Sasi Bhusana Rao B., Rajendran R., and Saralakumari D., Beneficial effects of hydro-alcoholic extract of Caralluma fimbriata against high-fat diet-induced insulin resistance and oxidative stress in Wistar male rats, Journal of Physiology and Biochemistry. (2014) 70, no. 2, 311–320, https://doi.org/10.1007/s13105-013-0304-1, 2-s2.0-84904666587, 24474087.

[6] Ramachandra Naik M., Rajappa Joga J., Nagaraja N., Nagashree B., and Shankramma N., Micropropagation of Caralluma adscendens var. fimbriata-an indigenous medicinal plant of India, Natural Products Chemistry & Research. (2017) 5, no. 278, https://doi.org/10.4172/2329-6836.1000278.

[7] Cortés A. J. and López-Hernández F., Harnessing crop wild diversity for climate change adaptation, Genes. (2021) 12, no. 5, 783–804,
https://doi.org/10.3390/genes12050783, 34065368.

[8] Jayawardena R., Francis T. V., Abhayaratna S., and Ranasinghe P., The use of Caralluma fimbriata as an appetite suppressant and weight loss supplement: a systematic review and meta-analysis of clinical trials, BMC Complementary Medicine and Therapies. (2021) 21, no. 1,
279–290, https://doi.org/10.1186/s12906-021-03450-8, 34758791.

[9] Gujjala S., Putakala M., Nukala S., Bangeppagari M., Rajendran R., and Desireddy S., Modulatory effects of Caralluma fimbriata extract against high-fat diet induced abnormalities in carbohydrate metabolism in Wistar rats, Biomedicine and Pharmacotherapy. (2017) 92, 1062–1072, https://doi.org/10.1016/j.biopha.2017.06.016, 2-s2.0-85020429845, 28618651.

[10] Asmi S., Lakshmi T., and Parameswari R., Caralluma fimbriata - pharmacological review, Journal of Advanced Pharmacy Education and
Research. (2017) 7, no. 3, 175–177.

[11] Rao A., Briskey D., dos Reis C., and Mallard A. R., The effect of an orally-dosed caralluma fimbriata extract on appetite control and body composition in overweight adults, Scientific Reports. (2021) 11, no. 1, 1–10, https://doi.org/10.1038/s41598-021-86108-2, 33762661.

[12] Maheshu V., Priyadarsini T., and Sasikumar M., Antioxidant capacity and amino acid analysis of Caralluma adscendens (Roxb.) Haw var. fimbriata (wall.) Grav. & Mayur. Aerial parts, Journal of Food Science and Technology. (2014) 51, no. 10, 2415–2424, https://doi.org/10.1007/s13197-012-0761-5, 2-s2.0-84920254534, 25328180.

[13] Padwal A. D., Varpe S. N., and Waman M. B., Phytochemical and nutritional analysis of Caralluma fimbriata L, International Journal of Researches in Biosciences and Agriculture Technology. (2016) 1, 1–4, https://doi.org/10.29369/ijrbat.2016.04.i.0013.

[14] Shenai A. and Anitha R., Antihyperglycemic activity of Caralluma fimbriata: an in vitro approach, Pharmacognosy Magazine. (2017 13no. 51, 499–504, https://doi.org/10.4103/pm.pm_59_17, 2-s2.0-85032898615.

[15] Malladi S., Ratnakaram V. N., and Babu S., Pharmacological review of Caralluma r.Br: a potential herbal genus, Asian Journal of

Pharmaceutics. (2018) 12, no. 4.

[16] Vajha M. and Chillara S. R. K., Evaluation of cellular antioxidant activity of selected species of Caralluma and Boucerosia on cell lines, International Journal of Applied Sciences and Biotechnology. (2014) 2, no. 1, 83–87, https://doi.org/10.3126/ijasbt.v2i1.9649.

[17] Choucry M. A., Shalabi A. A., El Halawany A. M., El-Sakhawy F. S., Zaiter A., Morita H., Chaimbault P., and Abdel-Sattar E., New pregnane glycosides isolated from Caralluma hexagona lavranos as inhibitors of ?-glucosidase, pancreatic lipase, and advanced

[18] glycation end products formation, ACS Omega. (2021) 6, no. 29, 18881–18889, https://doi.org/10.1021/acsomega.1c02056, 34337228.

[19] Qayyum N., Rani H., Mir K. B., and Khan A. Q., Caralluma pharmacological attributes, Journal of Food, Nutrition and Population Health. (2018) 2, no. 2, 2–13, https://doi.org/10.21767/2577-0586.100043.

Kell G., Rao A., and Katsikitis M., A randomised placebo controlled clinical trial on the efficacy of Caralluma fimbriata supplement for reducing anxiety and stress in healthy adults over eight weeks, Journal of Affective Disorders. (2019) 246, 619–626, https://doi.org/10.1016/j.jad.2018.12.062, 2-s2.0-85059234167, 30609411.

[20] Ramaswamy R. and Kamala R., Pregnane glycoside compositions and Caralluma extract products and uses, United States Patent.(2011) 2, no. 12, 1–28.

[21] Griggs J. L., Su X. Q., and Mathai M. L., Caralluma fimbriata supplementation improves the appetite behavior of children and adolescents with Prader-Willi syndrome, North American Journal of Medical Sciences. (2015) 7, no. 11, 509–516,https://doi.org/10.4103/1947-2714.170611, 2-s2.0-84948156538, 26713299.

[22] Dutt H. C., Singh S., Avula B., Khan I. A., and Bedi Y. S., Pharmacological review of Caralluma R.Br. with special reference to appetite suppression and anti-obesity, Journal of Medicinal Food. (2012) 15, no. 21, 108–119, https://doi.org/10.1089/jmf. 2010.1555, 2-s2.0-84863053982, 22191633.

[23] Griggs J., Single-case study of appetite control in Prader-Willi syndrome, over 12-years by the Indian extract Caralluma fimbriata, Genes. (2019) 10, no. 6, 447–454, https://doi.org/10.3390/genes 10060447, 2-s2.0-85069439392, 31212875.

[24] Babu P. A. S., Aafrin B. V., Archana G., Sabina K., Sudharsan K., Sivarajan M., and Sukumar M., Effects of polyphenols from Caralluma fimbriata on acrylamide formation and lipid oxidation—an integrated approach of nutritional quality and degradation of fried food, International Journal of Food Properties. (2017) 20, no. 6, 1378–1390, https://doi.org/10.1080/10942912 .2016. 1210161,2-s2.0-84995474876.

[25] Gujjala S., Putakala M., Gangarapu V., Nukala S., Bellamkonda R., Ramaswamy R., and Desireddy S., Protective effect of Caralluma fimbriata against high-fat diet induced testicular oxidative stress in rats, Biomedicine and Pharmacotherapy. (2016) 83, 167–176, https://doi.org/10.1016/j.biopha.2016.06.031, 2-s2.0-84976483570, 27372404.

[26] Kamil M, Fjayaraj A, Ahmad F, Gunasekhar C, Samuel S, Chan K, et al.(1999). Identification and quantification of flavonoids from Caralluma arabica and its quality control studies. J Pharm Pharmacol. 51(Suppl):225.14.

[27] Deepak, D, S. Srivastav and A. Khare.Progress in the Chemistry of Organic Natural Products.Springerlink 1997; 71: 169-325.

[28] Ramesh M, Y.N. Rao, M.R. Kumar, A.V.N.A. Rao, M.C. Prabhakar and B.M. Reddy. Antinociceptive and anti-inflammatory activity of carumbelloside-I isolated from Carallumaumbellata. J. Ethnopharmacol 1999; 68: 349-352.

[29] Zakaria, M.N.M., M.W. Islam and R. Radhakrishnan.Antinociceptive and anti-inflammatoryproperties of Caralluma arabica. J. Ethnopharmacol 2001; 76: 155-158.

[30] Lawrence RM, Chaudhary S. (2004). Caralluma fimbriata in the treatment of obesity 12th Annu WConger on Antiaging medicine held on December 2-5, (Las vegas, NV USA).

[31] Dutt H. C., Singh S., Avula B., Khan I. A., and Bedi Y. S., Pharmacological review of Caralluma R.Br. with special reference to appetite suppression and anti-obesity, Journal of Medicinal Food. (2012) 15, no. 2, 108–119, https://doi.org/10.1089/jmf.2010.1555, 2-s2.0-84863053982, 22191633.

[32] Griggs J., Single-case study of appetite control in Prader-Willi syndrome, over 12-years by the Indian extract Caralluma fimbriata, Genes. (2019) 10, no. 6, 447–454,
https://doi.org/10.3390/genes10060447, 2-s2.0-85069439392, 31212875.

[33] Babu P. A. S., Aafrin B. V., Archana G., Sabina K., Sudharsan K., Sivarajan M., and Sukumar M., Effects of polyphenols from Caralluma fimbriata on acrylamide formation and lipid oxidation—an integrated approach of nutritional quality and degradation of fried food, International Journal of Food Properties. (2017) 20, no. 6, 1378–1390, https://doi.org/10.1080/10942912.2016.1210161, 2-s2.0-84995474876.

[34] Scientific Opinion on the substantiation of a health claim related to ethanol-water extract of Caralluma fimbriata (Slimaluma and helps to reduce body weight pursuant to Article 13(5) of Regulation (EC) No 1924/20061 EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA)

[35] Lawrence, RM, and Choudhary, S. Caralluma Fimbriata in the Treatment of Obesity. 12th AnnualWorld Congress of Anti-Aging Medicine, December 2004, Las Vegas, USA.

[36] Kunert O, Rao VG, Babu GS, Sujatha P, Sivagamy M, AnuradhaS, Rao BV, Kumar BR, Alex RM,SchuhlyW, Kuhnelt D, Rao GV, Rao AV (2008) Pregnane glycosides from Caralluma adscendensvar. fimbriata. ChemBiodivers 5(2):239–250. doi:10.1002/ cbdv.200890021

[37] Gardiner JV, Kong WM, Ward H, Murphy KG, Dhillo WS, Bloom SR (2005) AAV mediatedexpression of anti-sense neuropeptide Y cRNA in the arcuate nucleus of rats results in decreasedweight gain and food intake. BiochemBiophys Res Commun 327(4):1088–1093.doi:10.1016/j.bbrc.2004.12.113

[38] Soundararajan Kamalakkannan, Ramaswamy Rajendran, Ramasamy V. Venkatesh, Paul Clayton,Mohammad A. Akbarsh a Effect of Caralluma Fimbriata Extract on 3T3-L1 Pre-Adipocyte Cell Division,Food and Nutrition Sciences, 2011, 2, 329-336doi:10.4236/fns.2011.24047 Published Online June 2011 (http://www.scirp.org/journal/fns).

[39] S. Gayathri Devi et al /International Journal of PharmTech Research, 2016,9(5),pp 223-230. 230

[40] Saivasanthi V Gowthamigoud, Swathi K, Aakruthi, Sowmya rani, Gupta A and Rao AS Evaluation of Caralluma fimbriata for analgesic, anti inflammatory and anxiolytic activities Int J Pharma 2011;1(1): 40-45ISSN 2249-1848.

[41] A.M.Shaikh, B.Shrivastava, K.G.Apte, S.D.Navale(2015), Effect of Aqueous Extract of Curcumazedoaria and Gloriosa superba Against DMH-Induced Colon Carcinogenesis In Wistar Rats,International Journal of PharmTech Research, (2015), Vol.8, No.10, pp 88-94.