EFFECT OF ARROWROOT (MARANTA ARUNDINACEA) STARCH POWDER ON OBESITY – A REVIEW

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ABSTRACT: Maranta arundinacea is planted for its starch rhizome. The starch extracted from the rhizomes is simple to digest and is often used as a thickener in dressings, soups, sauces, candies, cookies, and desserts. Rhizomes can also be eaten boiled or roasted. Medicinally, the pulp of fresh rhizomes is used in poultices to heal wounds and ulcers and the dried starch powder of Arrowroot, mixed with water or milk, is used to relieve stomach aches, diarrhea, and lower cholesterol content in the body. Obesity has become a major worldwide health problem. In every country in the world, the incidence of obesity is rising continuously, and therefore, the associated morbidity and mortality are expected to increase as well. Obesity increases cardiovascular risk through risk factors such as increased triglycerides, high LDL cholesterol, low HDL cholesterol, elevated blood glucose, insulin levels, and high blood pressure. The arrowroot starch powder can be given as soup or in milk in patients with obesity. Food enriched with dietary fiber has been associated with lowering blood lipid profiles. The starch powder, of arrowroot, contains niacin and thiamine vitamins, niacin has been known to be an effective treatment of dyslipidemia for almost half a century. Specifically, niacin and the fibrates are very effective in lowering triglycerides, raising HDL cholesterol, and shifting LDL particle size to a larger, more buoyant, and less atherogenic phenotype. Thus, incorporating arrowroot reduces cholesterol levels in the body. By reducing cholesterol levels, we can control obesity. So, arrowroot powder can be used as an anti-obesity drug.

KEYWORDS: Arrowroot, Obesity, Dyslipidaemia, Cholesterol, Niacin.

INTRODUCTION

Arrowroot (*Maranta arundinacea* L.) is a tropical herb, which contains a high amount of starch in its tuber. Arrowroot is native to South America. The Caribbean Arawak people treated arrowroot as a staple and termed it "aru-aru" (it means a meal of meals). Other countries, including the USA (Florida), Brazil, the Philippines, India, Sri Lanka, Indonesia, China, Kenya, and Tanzania have been reported to grow arrowroot.

Arrowroot produces superior quality crops in the tropical lowlands but can be grown at altitudes of up to 900-1000 meters above sea level. It forms thickets in shaded places. It has superficial roots and many cylindrical plump tubers (rhizomes) that can go deeper in the soil than the roots. Obesity is a disorder, that evolved due to complex interconnection between biological, psychosocial, and environmental factors that affect the standard of life of an individual. This can lead to multiple co-morbidities like hypertension, diabetes mellitus, stroke, osteoarthritis, and cognitive impairment. The current therapy for obesity includes boosting physical activity and to lessen calorie intake. When the lifestyle modifications fall short, medicinal treatment is recommended. Though countless modern anti-obesity drugs have been approved so far; most of them have been pull-out from the market because of their adverse effects. Arrowroot powder can be useful in this condition.

MATERIALS & METHODS

Sources of data collection

The method used in this study is a descriptive review from various sources that are compatible with the objectives. The process consists of different stages: searching, criticizing, synthesis and writing. Broad searches of the literature on the method of starch production from arrowroot focus on articles or research reports published from 2010 to 2022, which have a role in this literature review. In addition, literature is also taken from other published or compilations of articles from databases like PubMed, Scopus, and Google Scholar were searched with Boolean operators such as AND,

OR and filters such as relevant, FULL TEXT, and sort out for this review. Reviewing the above we can move on to a conclusion about the effect of arrowroot starch powder on obesity.

RESULTS & DISCUSSION

Preparation of Arrowroot powder

Production of starch and flour from arrowroot tubers is tiresome, long delayed, and a small amount of product recovery at the end. The arrowroot processing involves washing of rhizomes and careful peeling of skin; again, washing of peeled rhizomes and then careful peeling of skin; again, washing of the peeled rhizomes; grinding to produce coarse pulp; mixing of the pulp with clean water; series of sieving to separate the fiber; allowing the liquid to stand and let the starch out; clear away the starch, combining it with more water; and resettling overnight.

Table 1 The nutritional value of "Arrowroot starch raw" per 100 grams

Nutritional summary	
Total calory	65 Cal
Protein	4.2 g
Fat	0.4 g
Carbohydrate	13.4 g
Calcium	6 mg
Copper	0.12 mg
Iron	2.22 mg
Magnesium	25 mg
Manganese	0.17 mg
Phosphorous	98 mg
Sodium	26 mg
Potassium	454 mg
Zinc	0.63 mg
Vitamin A	17 IU
Vitamin C	1.9 mg
Vitamin B6	0.27 mg
Riboflavin	0.06 mg
Thiamine	0.14 mg
Niacin	1.69 mg

Folate	338 mcg
Fibre	1.3 gm

Arrowroot increases the bile production, which increases the uptake of cholesterol to the gall bladder since cholesterol is required for bile synthesis. Thus, incorporating arrowroot into the diet reduces cholesterol levels. Fresh arrowroots are a healthy and low-calorie option, which facilitates weight loss for weight watchers. Due to its high starch content, arrowroot may be suitable for gluten-free diets and promotes weight loss. For the people fighting obesity and are on a strict diet, arrowroot powder, by being very less fat and low in calories, promotes weight loss. Arrowroot contains potassium, iron, and vitamin B, which are helpful for metabolism, circulation, and heart health. Even the previous studies have even shown that arrowroot stimulates immune cells and boosts the immune system.

Arrowroot works wonders for the digestive system. It is helpful in digestive discomforts like acidity and indigestion since it exerts a mildly laxative effect in the stomach. Arrowroot affects normalizing bowel function thereby; it can be a significant option for irritable bowel syndrome. It had a long-term effect on constipation due to the demulcent effects of high-level starch content in arrowroot powder. Thus, arrowroot starch powder is an effective remedy for diarrhea, relieves nausea, and replaces nutrients that are lost due to diarrhea and vomiting. Since it is gluten-free, it can be taken by people who have Celiac disease.

From the above-mentioned table, it is evident that niacin is found in the arrowroot starch powder. Niacin has been used since the 1950s to lower the increased LDL (bad) cholesterol and triglyceride (fat) levels while raising the "good" HDL-cholesterol level in the blood. In vivo studies indicated that a diet containing arrowroot extract increased the serum IgG, IgA, and IgM levels in mice, thus it exhibits an immunostimulatory effect. The niacin present in the arrowroot starch powder weakens the obesity-induced adipose tissue inflammation through increased adiponectin and the expression of anti-inflammatory cytokines. Niacin also played a critical role in the treatment of atherogenic dyslipidemia due to its power in reducing the very low-density lipoprotein (VLDL), LDL-C, and triglycerides (TG). These findings suggest that niacin in arrowroot starch powder has a promising effect on obesity-induced metabolic disorders. By using this arrowroot powder the cholesterol level of the body can be regulated, that is arrowroot starch powder act as a drug for the treatment of obesity.

CONCLUSION

Thus, this article concludes that arrowroot starch powder reduces cholesterol levels in the body. Due to the pleiotropic action of niacin, it reduces the inflammatory cytokine expression on lipid metabolism. The multifaceted approach of arrowroot starch powder plays a pivotal role in indigestion, acidity, irritable bowel syndrome, and bowel disorders, and boosts the immune system, and diarrhea. So, the arrowroot starch powder could be the greatest boon for weight loss industrialization and thereby reducing the detrimental effect of modern anti-obesity medication.

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