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A New Diet Methodology: The Stevia Diet

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Abstract— *The research presents the methodology for controlling the empty calories in our regular diet caused by simple carbs (sugar). The non-communicable disease syndrome is spread worldwide due to the change in diets and lack of physical work. The noted non-communicable disease is diabetes; obesity etc., to overcome those diseases several dietary patterns are introduced worldwide. On analyzing various dietary patterns, it is found that people need to eliminate the excess consumption of sugary food item which causes high carbohydrates. The American heart association research recommends only 6-9 teaspoons of sugar per day in the Indian Diet. An Indian on a regular diet an average of 15 teaspoons of sugar per day is consumed without their consciousness. It is found that this tragedy spread all over the world depending on their culture. It is not possible to insist that people avoid sugary food items but it is achievable by using an alternate natural sweetener in their regular diet. Based on the review of Stevia Rebaudiana on using Stevia in foods, the sweetness will be withstood without any calories. Controlling the rise in calories leads to a healthy life.*

Keywords— *Stevia Rebaudiana; The Stevia diet; Food Dietary; Calorie elimination, Sugar substitution*

INTRODUCTION

In recent days the way of lifestyle, and food habits have changed. The literature [1] presents the difference between modern dietary patterns with our ancestor's diet. The modern food styles pave a way to many health issues mainly such as underage diabetes, and obesity. In 2021, as per the International Diabetes Federation [2], nearly 537 million adults are affected with diabetes. In future, it will be raised to 783 million by 2045. One of the root causes of diabetes are high intake of carbs, and lack in physical activities [3]. A study [4] on the variety of diets and eating patterns of college students in India, the 45.8% of students are frequently consuming more sugary foods. The problems associated with sugary foods are due to high content of simple carbohydrates [5].

Consuming large amount of added & hidden sugars will implicate high risk of obesity, heart diseases, diabetes etc., [6]. An article in Times of India [7], says that two-third of peoples are can't doing exercise due to their life style work pressure. Instead, peoples are following supportive diet chart such as the Paleolithic, Ketogenic, intermitted fasting methods etc., all diets are focused on a calorie deficient. Now a day's many sweeteners such as synthetic and natural sweetener with non nutritive sweeteners (NNS) are available. In the natural sweetener, stevia is more sweetened than the sucrose, and zero calories. An investigation on the effect of NNS on glycemic control is done [8]

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will assist to weight management and also reduce insulin resistance.

DIET METHODOLOGIES

The revolution in agriculture and Industries made a drastic change in our traditional food habits and regular activities [9]. Before cultivating the plant source, the foods taken by ancients are fruits, eggs, nuts, roots, vegetables, fish, and meats as their regular food. After the cultivation of plants and domesticating the animals, the food item includes grains, legumes, dairy products, salt, processed oils, and refined sugars. The modern lifestyle and irregular food habits will lead to many health problems on lower age itself. To maintain health now a day the people are referring to various diets. Among those, the most popular among the peoples are the Paleolithic diet, Ketogenic diet, and Intermittent fasting methodologies.

A. Paleolithic Diet

The Paleolithic diet is named as the caveman diet, Stone Age diet, and hunter-gather diet. This diet is followed by our ancient before 2.5 million years ago before the emergence in agriculture [10]. Now again the Paleolithic Diet is preferred for losing weight, optimizing athletic achievements, supporting health, and avoiding diseases than other dietary regimens. In the paleolithic diet, approximately 50% to 80% of food from plants and the remaining 50% to 20% of food from animals are included. The main foods items need to include in the Paleolithic diet are Meat, fowl, fish, Vegetables, fruits, Nuts and Seeds. The food items that are needed to exclude are grains, starchy vegetables, dairy products, legumes, added sugars and oils.

The paleolithic diet resulted in short-term progress only [11 & 12], it will not change the health condition but support those are affected with celiac disease.

B. Ketogenic Diet

In the medical world, the Ketogenic diet is a therapeutic diet used in medical epilepsy. The diet is composed of 55 to 60 % of fat, 30 to 35% of protein, and 5 to 10% of carbohydrates. In this diet, the reduced amount of carbohydrates to be taken as 20 to 50g per day [13]. Reducing carbohydrates leads to lower the blood glucose level and change the insulin secretion level [14]. Hence, to meet out the microbiome, epigenetics, weight loss, diabetes, cardiovascular disease and cancer problems, the ketogenic diet is suggested.

In Ketogenic diet, to maintain the nutritional ketosis and to limit the carbohydrates, it is required to take high fat close to 70% daily calories and protein should not be more than 1.5g/kg of body weight/day [15]. The mineral supplements and processed foods are not encouraged. The dietary pattern is preferred for people who are facing obesity and diabetes problem. For healthy person, some side effect will causes such as vomiting, constipation and diarrhoea. It is not adopted for people [16] who are affected by type 2 diabetes,

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cardiovascular diseases, pregnant women and breastfeeding women.

C. Intermittent Fasting

The voluntary period of avoiding the food and drinks as followed by our ancient is named as Intermittent Fasting. Fasting will remove the toxic matters from blood and purify the body [17]. In this intermittent fasting, there are various methods of fasting are available they are alternate day fasting, modified fasting regimens, time-restricted feeding, religious fasting, Ramadan fasting, and another religious fasting [19]. On alternate-day fasting method, without consuming any energy-containing foods, prevent the risk factor such as cell proliferation, reduces the total plasma cholesterol and triglyceride concentration. The modified fasting contains regular 5 days' energy food and the remaining 2 non-consecutive days there is a restriction in energy food intake of a week. This method of fasting produces better weight loss or metabolic changes in comparison to standard energy restriction methods. Next is time-restricted fasting, daily the interval of fasting ranges from 12 to 20 hours. It reduces body weight, total cholesterol, glucose and also improves insulin sensitivity. Some religious fasting, such as taking one large meal after the end of the day, one lighter meal before daybreak, and taking fruits and drinks alone in the daytime. All these types of fasting create metabolic regulation [18]. Hence, the intermittent fasting shows a positive impact on reduction of obesity and overweight. It also improves the immune system, promote autophagy, and maintain blood pressure and other skin diseases.

THE STEVIA DIET

On following the Paleolithic diet and Ketogenic diet, in both the grains such as rice, wheat, oats quinoa, barley, urad, black greens are avoided. Similarly, the oils such as Sunflower oil, Coconut oil, vegetable oil, gingelly oil, and rice bran oil are also evaded. In India, avoiding these grains, oils, and dairy products in dietary pattern are not accepted and followed by most people. Without giving up our regular diet, it is required to suppress calories for that a new diet methodology Stevia diet is introduced. The Stevia diet is suitable for both children and adults.

A. Stevia

Stevia is an organic plant-based sweetener extracted from the Stevia Rebaudiana Bertoni plant. This Stevia Rebaudiana plant is originated in South America and is a member of the Asteraceae family. The peoples use the stevia leaf in medicine and drink such as tea, juices in ancient days [19]. The plant contains a natural component as steviol glycoside. It is producing a distinct sweet taste. In 1970, Japan commercializes the large scale of crude, unpurified extracts of stevia. Later it spread to various countries such as the USA, UK, China, and Korea.

For the cultivation of the Stevia Rebaudiana plant, the land should be well-drained red soil or sandy

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loam soil with a pH range of 6.5 to 7.5. Now in India it is cultivated in Rajasthan, Maharashtra, Himachal Pradesh, Uttar Pradesh, Kerala, and Orissa [20]. Stevia can be used as a supplementary for sugar since one gram of stevia is 200 times more sweetener than the one gram of sugar [21]. The extract from the stevia plant contains 85 to 95% of steviol glycosides [22]. It is zero-caloric and the Glycemic index level is also zero. It is available in both liquid and white powder form.

The stevia leaf is 10 times more sweetener than the polished sugar available on market. Steviol is a sweet diterpenoid glycoside and 300 times more sweetener than sucrose. It is an appropriate sweetener with antibacterial, antiseptic, anti-inflammatory, anti-fertility, hypotensive, diuretic, and cardiotonic properties [23]. The stevia leaves contain 0.3% dulcoside, 0.6% rebaudioside C, 3.8% rebaudioside A and 9.1% stevioside [20]. It does not raise blood sugar levels and is safe for diabetics. Neurological effects are also not as like other artificial sweeteners. Mild stevia leaf tea offers excellent relief for an upset stomach. The testing result of stevia intake by a diabetes patient is presented [23].

B. *Purpose of the Stevia diet*

According to the National Health Service (NHS), the daily intake of calories for a man is 2500 calories per day and for a woman is 2000 calories per day. In India, the dietary pattern followed across the states are unhealthy is a report presented [24] by comparing with EAT-Lancet reference diet. Indians take more amounts of rice and sugar-related foods items with fewer proteins, fruits, and vegetables in both rural and urban areas. It is due to the cultivation of rice and sugarcane is large compared to the cereals, pulses, fruits, and vegetables. The food intakes by wealthy households in both rural and urban are 3000 kcal/day. It is higher than referred calorie intake, whereas the poor people will consume only 1645 kcal/day.

The Indian Council of Medical Research (ICMR), INDIAB study [25] shows that more than half the amount of Indians is a lack physical activity. The consumption of processed food such as snacks, prepared sweets, chips, etc, is also increased. The more calories are produced from rice and sugar items. This type of improper food diet system in India leads to many diseases and also young age dead. India contain both wealthy and poor people, it is too difficult to educate them to take more amounts of grains, protein, fruits, and vegetables. And insist them to avoid unhealthy fat food items as palm oil and vanaspati is not possible. Similarly, it is not achievable to avoid rice in diet but the control sugary food items in our diet are possible.

Normally, Indians consume 4 cups of tea/coffee/milk per day. In one cup of tea usually, 10 grams of sugar will be added to sweeten the tea. As per the University of California, San Francisco (UCSF) Medical Centre [15], one teaspoon of sugar contains 5 grams of carbohydrates about 20 calories. Hence two teaspoons of sugar in every 4 cups of tea/coffee/milk contain 40 grams of sugar. These 40

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grams of sugar contain 40 grams of carbohydrates. One gram of carbohydrate has 4 calories; therefore 40 grams of carbohydrate has 160 calories. In order to burn these 160 calories, a person needs to climb steps for 30 minutes or to dance for 30 minutes at a moderate speed. Apart from tea, Indian consumes more added sugar, hidden sugar food products like sweets, chocolates, cakes, desserts, beverages, juices, snacks, etc. on calculating those foodie items the calories are further increased. In the current situation, calorie burning is a critical task.

Taking stevia as a sweetener alternatively for sugar, will not increase the calories. Since it is zero carbohydrates, zero calories, and zero Glycemic Index. As per the literatures, it is suggested to consume 30% of Stevia in our regular diet [19]. Hence in the Stevia diet, a human can consume 9 teaspoons of ordinary sugar and 6 diet spoon of stevia to lead a healthy life. Stevia manages the dietary carbohydrates with sweetness. Hence, it is safe for people with diabetes. People affected with cancer disease also can take Stevia, since it is non-carcinogenic. By using Stevia, the fat tissues will not increase in the body, so weight can be managed properly.

Stevia is suitable for all including children and pregnant women; it is recommended by the Joint FAO/WHO Expert Committee on Food Additives (JECFA). As per the report on European Food Safety Authority (EFSA), there is no known allergy related to stevia extracts. Thus stevia can be used in foods and beverages. The objective measures of stevia-based baked products are addressed with the degree of satisfaction level [26]. The maximum usage of stevia level in food type is shown in figure 1.

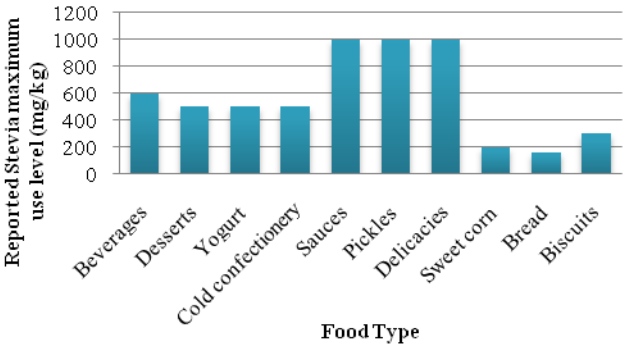

Figure 1. Usage level of stevia in various food types

The stevia will replace the potential usefulness of sugar substitutes without changing the visual acceptability or the physical characteristics of food products [27].

CONCLUSIONS

This paper presents a new diet methodology as the Stevia Diet. Initially, an overview of diet methodologies such as Paleolithic, Ketogenic, and intermittent fasting diet techniques are discussed. These methods are followed to reduce weight and to maintain health periodically. People lost their diet-conscious on sweet craving. Hence, without avoiding Indian dietary pattern just by replacing sugar with natural sweetener. Stevia in foods will overcome the disease risk factor. The Stevia is available as a white powder in various blends and liquid extract both are suitable for preparation of foods.

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