The Importance of Stevia (Stevia Rebaudiana Bertoni) in Public Health

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Keywords

Abstract
In the absence of modern medicine, people used alternative medicine for the treatment of diseases and they are still in use. Recently, due to the side effects caused by the drug, people prefer are turning to natural and so interest in alternative medicine is increasing with each passing day. The plants and their active ingredients constitute the basis of the alternative medicine. Stevia is also among the plants used for this purpose. Stevia rebaudiana Bertoni that is a perennial plant belongs to Asteraceae family and originated from Paraguay and Brazil. Stevia rebaudiana Bertoni leaves have stevioside, rebaudioside A, B, C, D, E and dulcosit-A, a glycoside that makes it sweeter than sucrose. It is reported that this sweetener is 300 times more effective than sugarcane. In addition, sweeteners obtained from Stevia rebaudiana can be safely used by diabetes, because it doesn’t need of insulin secretion during digestion of this sweetener. It can be easily used in the diet food products due to its zero calorie. Because the stevioside extract has high heat and pH stability, it does not undergo any distortion with heat. Therefore, it is being commercially used for flavoring and sweetener in beverages and food instead of many synthetic sweeteners. Moreover, stevia has diuretic, analgesic and blood pressure-lowering properties. It is also used for herbal treatment of the low blood sugar and stomach pain. The significant biological activities of stevia, such as its antimicrobial and antifungal properties, are known. It has also antioxidant feature and it prevents tooth decay. In experiments conducted on mice, it is determined that there is no any side effects of stevia. So, it is widely recommended the use of stevia.

1. Introduction

1.1. The Role of Medicinal and Aromatic Plants in the World

It is estimated that there are about 500,000 species of plants on earth. The number of wild plant species used as food is over 10,000. The number of used medicinal and aromatic plants is estimated to be around 100,000 (Baytop 1999). In this regard, medicinal and aromatic plants is an important part of the world’s flora and they are dispersed in a wide way different floristic regions. It is believed that between 35,000 and 70,000 plant species are used for medicinal and aromatic purposes in different regions of the world (Arslan et al., 2001).

Today, there is a significant demand for natural and nature in many fields. Besides the use of medicinal and aromatic plants for therapeutic, they are also used in food, spices, cosmetics and paint industry. Despite the breathtaking developments in the modern medicine, pharmaceutical and chemical industry, alternative treatment

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methods and treated with medicinal plants are still current and in recent years they see a growing interest in developed countries. On the other hand, about 2.5 billion people in the underdeveloped and developing countries, cannot benefit from modern medicine. The World Health Organization (WHO) gives utmost importance to the use of medicinal plants in these countries with regard to development their health technology compatible with their cultural and natural resources and avoid becoming dependent on developed countries (Arslan et al., 2000).

1.2. Origin of the Stevia Plant

*Stevia rebaudiana* which grows naturally Paraguay and Brazil is one of those plants. Stevia (*Stevia rebaudiana Bertoni*) was discovered in 1887 by the South American scientist Antonia Berto who studied on medicinal plants used by the Paraguay natives. Stevia has been also called as "Sweet herb" and "honey leaf" by Paraguay Indians (Anonim 2011). Sugar herb is used and cultured in Japan, China, Taiwan, Korea, Mexico, USA, Thailand, Malaysia, Indonesia, Australia, Tanzania, Canada, Brazil and Russia (Ramesh et al., 2006; Megeji et al., 2005).

1.3. Chemical Components of the Stevia Leaf Extract

Stevia leaf extract includes flavonoids, alkaloids, water-soluble chlorophyll and xanthophyll, hydroxycinnamic acids (caffeic, chlorogenic, etc.), water-soluble oligosaccharides, free sugars, amino acids, lipids, essential oils and trace elements (aluminum, iron, zinc, etc.) (Komissarenko et al., 1994).

1.4. Steviol glycosides Components and Their Features

Stevioside obtained from stevia leaves is sweeter than sucrose and includes rebaudiosid A, B, C, D, E and dulcosid-A glycosides (Carneiro et al., 1997). The dried leaves and dust extract of this plant are sweeter than sugar 15-20 times and 300 times respectively and they are zero-calorie (Singh and Rao, 2005).

1.5. Medical Uses of the Stevia Plant

Diabetes is a metabolic disease, which may cause damage of organs and death. Diabetes is seen in the high rates in the world. Despite of new hypoglycemic agents, diabetes and its associated complications continue as a large problem. Recently, medicinal plants have an increased interest in the treatment of diabetes (Suanarunsawat et al., 2004).

Stevia, unlike the crystallized sugar and artificial sweeteners, does not cause insulin secretion during digestion. Therefore, the liquid extract obtained from this plant is considered as a regulator of blood glucose. Sugar herb flavor is commonly used by diabetes or people who diet (Fronza and Folegatti 2003). The sweeteners used by diabetes are synthetic substances and aspartame-type agents have also some negative effects (Puri et al., 2011). Used as a natural sweetener stevia has positive effects in controlling diseases such as diabetes, hypertension and obesity. Furthermore it has diuretic, analgesic and hypotensive properties and it can be used in the herbal treatment of low blood sugar and stomach pain (Argueta and Cano 1993). The significant antimicrobial and antifungal biological activities of stevia are also known (Cerda-García-Rojas and Pereda-Miranda 2002). Also it has
anti-cancer and antioxidant properties (Okawa et al., 2001). In experiments conducted on mice, after the short or long-term use of the stevia, any serious carcinogenic or toxic effects were not observed and it was recommended for use by people with diabetes (Koyama et al., 2003; Megeji et al., 2005). Besides these positive properties, the contraceptive effect of stevia was determined (Deshpande et al., 2008).

1.6. Other Uses of the Stevia Plant

In Japan, the stevioside extract from stevia has been commercially used for flavoring and sweetener in beverages and food instead of many synthetic sweeteners in the mid-1970s (Carneiro et al., 1997). Due to the high stability against heat and pH, baking at high temperature is possible. So stevia extracts can be used in the foods cooked by boiling such as jam, compote, custard or in the foods cooked in the oven at high temperatures such as pie, cakes, cookies. Today, it is used instead of sucrose in many hot and cold drinks, seafood, confectionary industry, some vegetables and also in many food production such as sushi, soy sauce and yogurt (İnanç and Çınar 2009).

2. Conclusion

Stevia is widely used in almost every country in the world today. The components of stevia add significant medicinal and aromatic properties to it. So owing to its medicinal properties, the use of stevia is widely recommended. As a result of various studies on Stevia, any adverse effects on human health has not been established. Consequently, the use of stevia is extremely convenient for public health.

References


Baytop T. 1999. Türkiye’de Bitkiler ile Tedavi (Geçmişte ve Bugün), Nobel Tıp Kitapevleri, İstanbul, 480 s.


