

DETERMINATION OF THE ANTIOXIDANT ACTIVITY OF
STEVIA REBAUDIANA BERTONI PLANT POWDER IN
VITRO CONDITIONS

¹Kurolboyeva Sh.N.,

²Islamov A. Kh.,

¹Zaripova R.Sh.,

³Saytdjanov Sh.N.,

³Maxmudov A.A.

¹Tashkent Pharmaceutical Institute

²Institute of Bioorganic Chemistry named after Academician O. S.
Sadikov of the Academy of Sciences of the Republic of Uzbekistan

³Tashkent State Transport University

Annotation: *This article presents information on the in vitro determination of antioxidant activity of Stevia rebaudiana Bertoni plant powder.*

Keywords: *stevia rebaudiana, antioxidant, bactericide, antiseptic, antibacterial, immunity.*

Introduction: Stevia (Stevia rebaudiana Bekht.) - Asteraceae - The stevia genus of the Asteraceae family includes more than 180 species of plants. Stevia - Stevia rebaudiana Bertoni is one of them. Stevia is an annual plant that can grow up to 1 meter tall. Its leaves are simple, opposite on the stem, 2-3 cm long. The surface of the leaf blade is smooth, the front side is not pointed. The flowers are collected in 6-7 white complex inflorescences, 3-4 mm long. The fruit is 3-4 mm. It blooms in September - November. The seeds ripen in October – November.

The antioxidant activity of *Stevia rebaudiana* Bertoni plant powder is determined by the inhibition of the autoxidation reaction of adrenaline in vitro and prevents the formation of free oxygen. The method is based on the inhibition of the autoxidation reaction of adrenaline, and the preparations are expressed in percent (%) in terms of the formation of ROS (active form of oxygen) and autoxidation of adrenaline over time in vitro. For this, 2.0 ml of 0.2 M sodium carbonate-sodium bicarbonate ($\text{Na}_2\text{CO}_3\text{-NaHCO}_3$) buffer pH=10.65, 56 $\mu\text{g/ml}$ of 0.18% adrenaline (epinephrine) hydrochloride solution, 30 $\mu\text{g/ml}$ of antioxidant preparation were added and, with rapid mixing, the solution was examined in a 10 mm cuvette at a wavelength of 347 nm for 30 seconds to 10 minutes on a Cary 60 UV-Vis Agile Technologies spectrophotometer.

The amount of the extract under study (concentration 1 mg in 1 ml) is used as a standard. 2.0 ml of 0.2 M sodium carbonate-sodium bicarbonate ($\text{Na}_2\text{CO}_3\text{-NaHCO}_3$) buffer pH=10.65, buffer, 0.18% 56 $\mu\text{g/ml}$ (5.46 mM) adrenaline is used as a control sample.

Antioxidant activity was expressed as a percentage of inhibition of adrenaline autoxidation and was calculated using the formula below.

$$AA\% = \frac{D1 - D2 \times 100}{D1}$$

Optical density of adrenaline hydrochloride solution added to buffer D1;

Optical density of the extract under study and adrenaline hydrochloride added to buffer D2. Statistics were analyzed using the T-Student test and the Origin 6.1 USA program.

Natural antioxidants protect the body from free radicals, increase its resistance to various adverse external influences, and slow down the aging process. Natural antioxidants can be used to correct many diseases. A lack of antioxidants in the body leads to a number of diseases. The antioxidant properties of some medicinal plants, such as sweet clover, fennel, calendula, chamomile, and rue, have been studied. Determining the total amount of

antioxidants in medicinal plants is of the greatest biological importance. The antioxidant properties of *Stevia rebaudiana* Bertoni plant powder were determined *in vitro*, the results are presented in Table1.

In vitro antioxidant activity of *Stevia rebaudiana* Bertoni plant powder and antioxidant properties and screening assays.

Table 1.

No	Stevia rebaudiana Bertoni plant powder	<i>In vitro</i> µg/ml concentration	Control (Gliclazid)	Experimental result	AA activity %
1.1	Stevia rebaudiana Bertoni plant powder	100 mg/ml (10%)	0.2214	0.1768	20.14
1.2	Stevia rebaudiana Bertoni plant powder	250 mg/ml (25%)	0.2452	0.1890	23.01
1.3	Stevia rebaudiana Bertoni plant powder	500 mg/ml (50%)	0.2226	0.1577	29.15
1.4	Stevia rebaudiana Bertoni plant powder	750 mg/ml (75%)	0.2523	0.1758	30.32
1.5	Stevia rebaudiana Bertoni plant powder	1000 mg/ml (100%)	0.2804	0.1720	36.94
B	Quercetin	1000 mg/ml (100%)			34,4%
A	Gliclazide	1000 mg/ml (100%)			10,0%

In vitro antioxidant assays and screening assays of antioxidant properties of *Stevia rebaudiana* Bertoni powder at 5 different concentrations of 100/250/500/750/1000 µg/ml showed antioxidant properties when compared to the standard antioxidant **quercetin** and **gliclazide** antioxidants. *Stevia*

rebaudiana Bertoni powder was shown to have 36.94% antioxidant activity in Figure 1.

Conclusion

1. *In vitro* antioxidant assay of Stevia rebaudiana Bertoni powder at 5 different concentrations of 100/250/500/750/1000 µg/ml showed antioxidant properties when compared to the standard antioxidant **quercetin** and **gliclazide** antioxidants. Stevia rebaudiana Bertoni powder was found to have 36.94% antioxidant activity.