The recent introduction of the cultivation of *Stevia rebaudiana* Bertoni in Mexico has gained interest for its potential use as a non-caloric sweetener, but some other properties of this plant require studies. Extracts from two varieties of *S. rebaudiana* Bertoni adapted to cultivation in Mexico were screened for their content of some phytochemicals and antioxidant properties. Total pigments, total phenolic and flavonoids contents of the extracts ranged between 17.7-24.3 mg/g, 28.7-28.4 mg/g, and 39.3-36.7 mg/g, respectively. The variety “Criolla” exhibited higher contents of pigments and flavonoids. Trolox equivalent antioxidant capacity ranged between 618.5-623.7 mM/mg and DPPH decolorization assay ranged between 86.4-84.3%, no significant differences were observed between varieties. Inhibition of carotene bleaching ranged between 62.3-77.9%, with higher activity in the variety “Criolla”. Reducing power ranged between 85.2-86% and the chelating activity ranged between 57.3-59.4% for Cu2+ and between 52.2-54.4% for Fe2+, no significant differences were observed between varieties. In conclusion, the results of this study showed that polar compounds obtained during the extraction like chlorophylls, carotenoids, phenolic compounds and flavonoids contribute to the antioxidative activity measured. The leaves of *S. rebaudiana* Bertoni could be used not only as a source of non-caloric sweeteners but also naturally occurring antioxidants.

**Keywords**