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## ***In Silico* Identification and Characterization of Kaurene Synthase Protein in *Stevia rebaudiana* MS007**

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### **Abstract**

*Stevia rebaudiana* (Sr), belonging to Asteraceae family is a plant native to Paraguay. It is currently being used as a healthier alternative for sugar. Sr produces steviol glycosides (SGs), a group of secondary metabolite compounds that is responsible for its sweetening taste. SGs act as sweetener due to the presence of two major compounds, Stevioside and Rebaudioside A. Biosynthesis of these compounds involves enzymes such as geranylgeranyl pyrophosphate (GPPS), copalyl diphosphate synthase (CPPS), kaurene synthase (KS) and kaurene oxidase (KO) in the pathway. In this study, the identification and characterization of *Stevia rebaudiana* MS007 kaurene synthase (SrKS) were done by *in silico* analysis of the transcriptomic dataset. Homology search from BLASTx resulting in SrKS from query Cluster-31069.42907 (Sr MS007) of transcriptomic dataset shows the highest similarity percentage identity (99.62%). ExPasy tools were used to translate the nucleotide sequence into protein sequence. The protein domain is predicted by protein domain search analysis using Interpro and shows IPR005630 (terpene synthase metal-binding domain) available at positions 454 to 719 and IPR001906 (terpene-synthase-N-terminal-domain) at position 222 to 411 as the domains. In constructing the phylogenetic analysis tree, multiple sequence alignment was initially done using MUSCLE and MEGA-X was used as phylogenetic tree analysis tools. Cluster-31069.42907 shows the relationship between the ancestors, based on the bootstrap value. Bootstrap value of *Helianthus annuus* and *Stevia rebaudiana* is 100% as both the sequences are from the Asteraceae family. This study contributes to a deeper understanding of *S. rebaudiana* MS007 Kaurene synthase through *in silico* analysis.

**Keywords:** *Stevia rebaudiana*, Kaurene synthase, Steviol glycosides, Rebaudioside A, Stevioside





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