

EXTRACTION AND PURIFICATION OF STEVIOL GLYCOSIDES

Steviol glycosides (or 'stevia') are chemical compounds extracted from the leaves of *Stevia rebaudiana*. These glycosides are estimated to be 30-300 times sweeter than sucrose and find extensive use in sweetening applications as a high intensity sweetener. Stevia is a 'natural' high intensity sweetener and is viewed more favorably by consumers as a healthful non-caloric sweetener compared to artificial high intensity sweeteners.

The manufacturing process for stevia begins with the extraction of steviol glycosides from the leaves of *Stevia rebaudiana* using hot water. The resulting extract then undergoes decolorization and desalination before being purified in an adsorption-desorption process, usually using ethanol as a solvent. It is then spray-dried into a white powder and mixed with bulking agents suitable for consumer use. To address the bitter off-notes found in native stevia extracts, individual steviol glycosides such as Reb A and D may be purified using adsorption chromatography.

Recently, new generation processes for producing individual steviol glycosides such as Reb D and Reb M in high yields and purities have been developed. These novel processes produce the desired steviol glycosides via fermentation and enzymatic bioconversion instead of extraction from stevia leaves. The final stevia product imparts sweetness to foods without any bitter aftertastes, allowing superior food formulations to be developed.

ARi provides a suite of technologies ideally suited for the multiple separations in the stevia production process. Fractal fluid distribution technology facilitates ARi's high-efficiency, shallow-bed adsorption and ion exchange systems, suitable for the decolorization and desalination steps. ARi's purpose-designed and optimized Simulated Moving Bed chromatography systems provide a high-performance, cost-efficient solution for the separation and purification of glycosides. The company has experience and capability in the design and operation of explosion-proof systems, necessary for processes using flammable solvents.

With our leading-edge chromatographic process modelling capability and piloting facilities, and our experience in the design and supply of ion exchange and chromatographic equipment at all scales, ARi is uniquely placed to meet your stevia processing equipment and system needs.

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