

Rotocav



Technology

Innovative Technological Solution
For The Food/Pharmaceutical/Cosmetic
Industry



Extraction



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Traditional Process

Actually, the extractions of bio-components from natural matrices are performed using solvents: all of these processes are based on diffusivity and osmotic principles.

All of these techniques require long extraction time and the extraction yield is usually low.

It is necessary to underline that the solid-liquid extraction is promoted when the contact of the solid phase with the liquid is emphasized: for this reason many new techniques have been developed with the aim of maximizing this aspect.

Innovative Process With The Use of ROTOCAV Technology

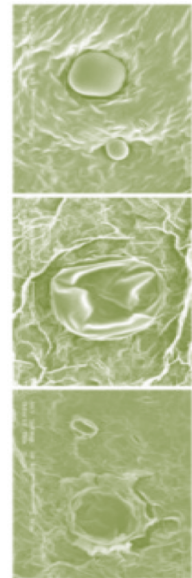
The core of the ROTOCAV technology is the cavitation chamber, where a rotor and a stator are installed to generate controlled cavitation. During high speed rotation, rotor channels are periodically aligned with stator channels: the processed liquid is accelerated in the radial direction and, flowing through the free channels, is subjected to:

- shear stresses: the mechanical effect can reduce solid particles size and increase the specific surface area by promoting solvent access to the cell content;
- pressure waves and cavitation phenomena, and generation of micro-jets, resulting in the rupture of the cell membrane, helping the release of its content.

When the fluid cavitates under controlled conditions, micro-bubbles are generated: they experience a cyclic dynamic, as these bubbles generate, grow and implode in a short time (microseconds).

When the bubbles collapse, local high pressure and temperature promote the cell membrane rupture and the release of their content in the liquid medium.

In other words, the cavitation increases the mass transfer and diffusivity of the bio-components of interest into the liquid medium.



Comparison (Traditional Systems vs ROTOCAV Technology)

TRADITIONAL SYSTEMS	ROTOCAV
Extraction is not completed	High extraction yields
Solid matrix is not completely exhausted	Solid matrix completely exhausted
Long extraction time, high operative costs	Short extraction time and low operative costs
Low versatility	High versatility
Low quality of extracts	High quality of extracts