

## DEVELOPMENT OF MICROENCAPSULATION SYSTEMS OF BIOLOGICALLY ACTIVE AGENTS FOR WINEMAKING BASED ON LOCAL RAW MATERIALS

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During the past decade there has been a great expansion in the development of microencapsulated food ingredients. Microencapsulation is widely used in various industries. The reason is that microcapsules are not an end product, but generally a technique to overcome process limitations. Microcapsules are tiny capsules containing materials as adhesive or medicine which release when the capsules are broken, melted, or dissolved. Hollow micro particle composed of a solid shell surrounding a core-forming space available to permanently or temporarily entrapped substances. Microencapsulation allows immobilization, protection, release and keep of active ingredients. The production of sparkling wine with microencapsulated yeast in natural gels is a new method of cell release. Sparkling wine production has a very relevant economic impact, especially when it's produced by the "method Champenoise". The yeast sedimentation step can take weeks which involves a considerable amount of labor and needs a crucial percentage of the root cellar where to keep it. For these reasons a lot of alternatives are currently studied, such as using of flocculent yeast strains, using chemical additives, and using microencapsulated yeast are some of them.

In the segment of technology associated with the encapsulation of food products, in an environment of competitiveness, the innovation factor is paramount. The technological innovation in the systems of encapsulation of ingredients allows creating differentials in products that can provide the most varied sensations for the consumer. The encapsulation technology is in increasing expansion and constant evolution, being of competence of the scientific community of the science and technology of food and of the industries to be kept abreast both in rela-

tion to the use of new materials, as in the techniques employed, that transform ideas products with high added value. The microencapsulation of an active ingredient in yeast permits its isolation and protection from an external, degrading environment that could irreversibly damage the chemical structure of the active. It also allows mask and deliver the content in a site of required interest, where electric or mechanical stimuli could release content from the yeast microcapsules. Yeast microcapsules with an average size of 8  $\mu\text{m}$  are of particular interest for food processing, agrochemicals, printing processes, pharmaceutical technology and, more recently, in cellular encapsulation.

There are significant recent developments in winemaking process in all stages of wine production and especially in the fermentation process. The use of immobilized microorganisms has been viewed as a means for solving a number of practical problems in biotechnology-based manufacturing processes. In traditional sparkling wine production, lees removal is a labor-intensive and time-consuming process. Industrial use of immobilized yeasts in the classic technology of wine champagnization makes it possible to reduce and simplify the riddling (*remuage*) and disgorging procedures.

Microencapsulation provides an effective method to cover an active compound with a protective wall material and thus, offers numerous advantages. Microencapsulation is an important approach to meet all demands by delivering bioactive food components at the right time and right place.

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