

INTRODUCTION:

Probiotics are live microorganisms that are administered in adequate amounts can confer a health benefit. These can be added not only in fresh food but also in dry products with low water activity and an expected shelf life of months, however, cell survival can be affected by environmental factors where microencapsulation is an option for protection. One of the main applications of complexes is the microencapsulation reporting biopolymer systems for encapsulation purposes in food and pharmaceutical applications. The aim of this study was to evaluate the development of a multilayer emulsion of soy protein (SP) and gum Arabic (GA) to pH 3.0 to the formation of microcapsules of *B. coagulans* and this can be considered as a system with capsule properties like a protection barrier for bioactive substances.

METHODOLOGY

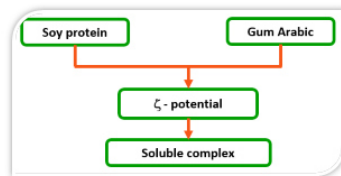


Fig. 1. Soluble complex process as function of SP:GA ratio

Table 1. Characteristics of *B. coagulans*

Property	<i>B. Coagulans</i>
Gram	(+)
Catalase	(+)
Spores	(+)

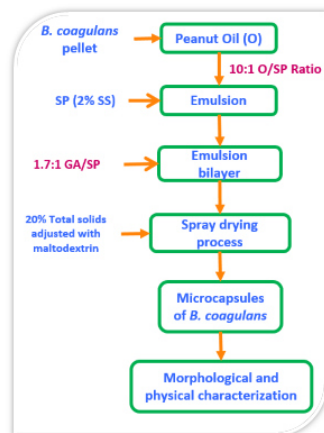
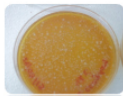


Fig. 2. Multilayer emulsion process to obtain microcapsules of *B. coagulans*.

RESULTS

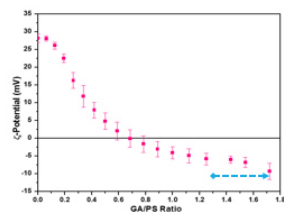


Fig. 3. Titration profile of GA:SP Ratio at pH 3.0

The additive titration curve in the complex formation obtained at pH 3.0 shown an optimal ratio at 1.7:1.0 for GA/SP with a soluble complex negatively charged. (Fig. 3).

The multilayer emulsion (Fig. 4) was made before to obtain microcapsules with bacteria, at the same time was monitored the growing kinetic.

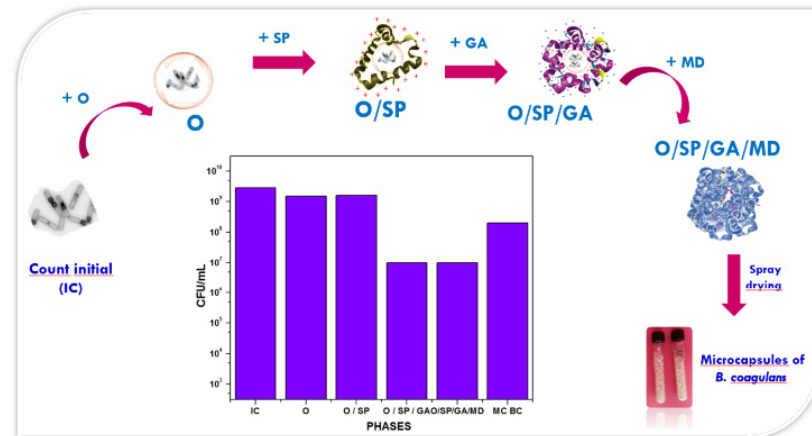


Fig. 4. UFC/mL of *B. coagulans* during the formation of microcapsules: Incorporated in the oil (O), making the primary emulsion (O/SP), bilayer emulsion (O/SP/GA), before of spray drying process (O/SP/GA/MD) and microcapsules (MC BC)

It was identified the bacteria before and after of spray drying process with the same morphological characterization (Table 1). The viability of *B. coagulans* during spray drying process was verified in each stage, the count decrease to be formed the bilayer however in the microcapsules more CFU/ml appeared, it seemed that the steric conformation of the molecules is involved because could reduce the leakage of the microcapsules and improve the shelf life of bacteria.

CONCLUSIONS

The use of the soluble complex during the microencapsulation of *B. coagulans* had provided higher recovery due to bilayer barrier to protect it indicating that in the complex formatted (soy protein – gum Arabic) improved the stability of emulsion because of a better adsorption to the surfaces the both biopolymers.

REFERENCES

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