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**Casein micelles as encapsulating material and delivery system for JABUTICABA EXTRACT**

Martins E.; Nascimento L.G.L.; Casanova F.; Silva, N.F.N.; Carvalho, A.F.

**INTRODUCTION**

The jabuticaba is a dark berry rich in vitamin C, minerals and phytochemicals (phenolic and anthocyanins). These last ones have biological properties including strong antioxidant and anti-inflammatory, anti-hyperlipidemic, and anti-obesity properties. The polyphenols are found only in the fruit peel (≈50% of fruit), which is not directly edible. Thus, the extraction of anthocyanins and other bioactive compounds from jabuticaba peel is of industrial interest. However, polyphenols originating from jabuticaba are unstable under environmental conditions and their encapsulation is necessary for industrial applications.

**METHODS**

**Peel**

![Peel diagram](image)

The extract has been showing the cascein micelles in suspension. However, the crosslinking allowed the release of monomers.

**RESULTS**

The polyphenol extract and the casein micelles, crosslinked or not, were mixed at the molar ratio of 1:1, and then, spray-dried. Polyphenol extraction from casein micelles was based on the principle that these materials present more affinity to non-polar substances than to the protein.

**CONCLUSION**

This work showed that crosslinked casein hydrogel can be a good candidate to encapsulate Jabuticaba extract. The polyphenols interact spontaneously with caseins and it is entrapped into micelles. The internal encapsulation of extract did not change the properties of caseins in suspension. However, the extract caused modifications in the protein matrix, which can be attested by rheological measurements and pure size evaluation. Crosslinked casein micelle hydrogel can encapsulate polyphenols without large changes in hydrogel properties. For this reason, this hydrogel can be applied to carry and delivery such compounds. After spray drying, the crosslinked micelles presented higher protection of polyphenols against stress agents such as aging and heat treatment, being a good alternative to encapsulation. This brings about the potential use of this encapsulation agent as functional ingredient for foods or drugs.