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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 jaboticaba is a dark berry rich in vitamin C, minerals and phytochemicals (phenols and anthocyanins). These last ones have biological properties including strong antioxidant and anti-inflammatory, anti-diabetics, 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 jaboticaba peels is of industrial interest. However, polyphenols originating from jaboticaba are unstable under environmental conditions and their encapsulation is necessary for industrial applications.

The polyphenols reduce the risk of disease

Cancer Cardiovacular disease Diabetes Chronic disease

Polyphenols of jaboticaba fruit are instable under environmental conditions and their encapsulation is necessary for industrial applications.

METHODS

Peel

Hydrophilic interactions (van der Waals forces in hydrogen bonding)

ANTHOXYANINS

Hydrophilic interactions

β-casein

Polyphenols decrease the risk of disease

METHODS

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 pore 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 deliver 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.