

WATERPROOF COATINGS FOR HYDROPHILIC FOODS

Avelar Z<sup>1\*</sup>, Maciel F<sup>1</sup>, Silva P<sup>1</sup>, Paulico L<sup>2</sup>, Miranda C<sup>2</sup>, Vicente A A<sup>1</sup>  
\*zsb.avelar@gmail.com

<sup>1</sup>Centre of Biological Engineering, University of Minho, Braga, Portugal

In the food industry, the incorporation of dry or poorly hydrated food components in hydrophilic food matrices has only been possible through the use of two-compartment packaging systems, designed to maintain the components separated until their consumption. The main purpose of this research is to provide a solution to this long-standing problem, through the development of hydrophobic coatings, allowing the incorporation of food components with low water activity (e.g. cereals) in hydrophilic foods.

In this work, coatings were applied on chocolate spherical breakfast cereals by spray application. Briefly, a defined quantity of cereals were placed inside of a coating pan, in constant agitation and the coating was applied directly on cereals by spray application. The samples were analysed by their stability in water, swelling and textural properties, after a determined period of time (generally 47 days). It was found that a formulation containing beeswax and cocoa butter presented full stability in water (i.e., cereals coated with this formulation remain intact during the defined period of time). After 47 days in water, in a sample of 10 cereals from a single coating assay containing this formulation, 8 of them presented a mean value of swelling of  $0.60 \pm 0.24$  %, which is very close to the typical value of swelling for dry coated cereals (0 %). The textural profile analysis of this sample allowed to observe the existence of force peaks, correspondent to the fraction of a crispy cereal, in spite of the existence of more attenuated force peaks when compared to those observed in the compression profile obtained from dry coated cereals. These results indicate that these cereals may have preserved some of their crispness after the test period.

The loss of textural properties of food components with low water activity will, this way, be reduced by this technology.