EFFECT OF WHEY PROTEIN BASED COATING ON WEIGHT LOSS, TEXTURE AND STRUCTURE OF FROZEN STRAWBERRIES AS AFFECTED BY FREEZING RATE

Marina Soazo\textsuperscript{a}, Amelia C. Rubiolo\textsuperscript{a}, Roxana A. Verdinib

\textsuperscript{a} Instituto de Desarrollo Tecnológico para la Industria Química (INTEC, UNL-CONICET). Güemes 3450, 3000, Santa Fe, Argentina.

\textsuperscript{b} Instituto de Química Rosario (IQUIR, UNR-CONICET), Suipacha 570, (2000) Rosario (Santa Fe), Argentina. Departamento de Química Analítica, Facultad de Ciencias Bioquímicas y Farmacéuticas, Universidad Nacional de Rosario (UNR).

Freezing is one of the most effective treatments for extending shelf life and ensure high-quality food products. However, in the case of frozen fruits some of the potential problems are the high drip loss after thawing and the significant loss of textural quality. Among its many applications, edible coatings have been proposed as barriers to minimize moisture loss in frozen foods thus retarding the rate of package ice formation and dehydration of the product surface. The objective of this investigation was to study the effect of whey protein based coating on weight loss, firmness and microstructure of frozen strawberries. For that purpose, aqueous solutions of whey protein concentrate were prepared with Glycerol, potassium sorbate, beeswax (0, 20 and 40\% w/w dry solid basis) and Tween 80. Emulsions were applied to strawberries using vacuum. A group non-dipped and a group dipped in distilled water were used as controls. After drying at 5 °C, strawberries were submitted either to slow or rapid freezing. Both groups of strawberries were stored at -20 °C during 30 days and thawed at 5 °C. Weight loss, textural parameters and microstructure were analyzed. Results indicated that whey protein based coating were not effective to decrease weight loss and texture degradation of strawberries regardless of freezing rate. Microstructural damage decreased with the increase in freezing rate, but coated strawberries were similar to controls. In conclusion, textural and structural deterioration due to loss of turgor by dehydration of strawberries could not be attenuated using whey protein based edible coatings.