

PASTING, THERMAL AND PHYSIOCHEMICAL PROPERTIES OF WHEAT STARCH FROM THE “BRAZILIAN CERRADO” WHEAT

Catia Maria Pontes Bezerra¹; Thais de Oliveira Alves¹; Pihetra Oliveira Tatsch²; Martha Zavariz Miranda²; Cristina Yoshie Takeiti³; Mariana Simões Larraz Ferreira^{1*}
(mariana.ferreira@unirio.br)

¹ Laboratory of Bioactives, Food and Nutrition Graduate Program (PPGAN), Federal University of the State of Rio de Janeiro (UNIRIO), Rio de Janeiro, Brazil.

² Embrapa Trigo, Passo Fundo, RS, Brazil.

³ Embrapa Agroindústria de Alimentos, Rio de Janeiro, Brazil.

Wheat from “Brazilian Cerrado” has been pointed as an alternative to enhance the Brazilian wheat quality. The quality of starch, the major component of flour, is often neglected and could explain the performance of flour during the development of wheat-based products. Besides genotype, location and environment may affect the quality of starch. In this study, we evaluated the effect of environment and genotype in starch properties of wheat from Cerrado. 34 wheat samples (*Triticum aestivum*) were cultivated and harvested at 5 different Brazilian regions: Uberaba (U), Madre de Deus de Minas (M), Coromandel (C), Piumhi (P) and Iraí de Minas (I). Starches were extracted and submitted to Rapid ViscoAnalyser, Differential Scanning Calorimetry and X-ray Diffraction. Resistant starch (RS), amylose (AM) and damaged starch (DS) were determined using standard methods. (I) samples (irrigated) showed the major values of maximum peak viscosity (2824 cP) and AM (28%), while P samples showed the major enthalpy (11.79 J/g) and relative crystalline (26.85%), that could explain the high mean of RS (0.84%). However, CPAC09208U presented the highest RS (1.70%). M samples showed the major particle size (62.46 µm) and DS content (4.77%), while U samples had the major RS (0.87%) followed by P (0.84%). BRS264 and irrigated genotypes CPAC (0872, 0886, 0841, 0891) showed the highest mean values of peak viscosity (2838 and 2823 cP, respectively). CPAC09236 presented the highest mean enthalpy (11.51 J/g) and crystallinity (24.20%) in all locations, showing potential as resistant starch ingredient flour. PF120.337 and PF120.212 showed the highest SD (4.93%). Location conditions and genotype significantly affected the starch properties. Irrigation can affect maximum viscosity peak and amylose content. Piumhi region showed the highest values of resistant starch. Relative crystallinity and enthalpy showed to be more influenced by genotype than from the environment, especially for the genotypes BRS264 and CPAC 09236.

Keywords: DSC, RVA, damage starch, Wheat starch.