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Correlating the properties of different carioca bean cultivars (*Phaseolus vulgaris*) with their hydration kinetics

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Running title: Carioca bean hydration kinetics

Abstract

This work explained how the intrinsic properties of beans affects the hydration process. For that, different properties of six cultivars of carioca bean (a variety of common bean) were analyzed to verify the correlation with their hydration kinetics characteristics (hydration rate, lag phase time and equilibrium moisture content), using a Multiple Factorial Analysis (MFA): the chemical composition (starch, protein, lipids, minerals (Mg, P, S, K, Ca, Mn, Fe, Cu, Zn), functional groups from the seed coat analyzed by FT-IR), physical properties (size, 1000 grain weight, seed coat thickness, energy to penetrate the bean) and microstructure. Only few properties correlated with the hydration kinetics characteristics of the studied bean, comprising both composition and structure. The fat content, potassium content, specific