INFLUENCE OF TEMPERATURE ON THE KINETICS OF COMBINED DRYING OF TRITURED BANANA PEEL

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Banana is one of the most produced fruit in the world. During the production, consumption and processing, many wastes are generated. Drying and storage processes need to be developed for these wastes in order to achieve important advantages such as easy transportation, reduced microbial load, nutrient concentration and availability for processing. The aim of this work was the modeling of combined drying kinetic of banana peel triturated at temperatures of 40, 60 e 80 °C. Fixed and fluidized bed driers were used to the experimental procedures. First, samples of triturated banana peel (Musa acuminata AAA cv. Dwarf Cavendish) were dehydrated in the fixed bed drier (hot air velocity of 1.5±0.2 m·s\(^{-1}\)) reaching the moisture content of 4.0 kg·kg\(^{-1}\) (d.b.) and immediately, the fluidized bed drying (fluidization air velocity of 4.0±0.2 m·s\(^{-1}\)) was used to get the equilibrium moisture content. The empirical models of Lewis, Henderson-Pabis and Page were employed to modeling the experimental drying curves. In the fitting, the equilibrium moisture content was calculated by means the sorption isotherms using the GAB model. Final values of \(a_w\), determined at the final of each experimental procedure, were used to determine these. The Page model showed the best fit results, with \(R^2=0.993\). The drying rate parameter of Page model (\(k\)) increased as the temperature increased, showing values of 4.17x10\(^{-4}\), 5.11x10\(^{-4}\) and 23.23x10\(^{-4}\) s\(^{-1}\) for the fixed bed and 3.99x10\(^{-4}\), 13.75 x10\(^{-4}\) and 11.51 x10\(^{-4}\) s\(^{-1}\), for the fluidized bed at temperatures of 40, 60 and 80 °C, respectively.