

عنوان مقاله:

Application of Different Models to Correlate Water Activity and Moisture Content of Hydroxypropylated elatinized Oat Starch

محل انتشار:

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خلاصه مقاله:

The objective of this study was to determine the sorption isotherms of gelatinized and hydroxypropylated-gelatinized oat starch (OS) at 5, 15, 25 and 40 °C to assess several sorption models for its ability to describe the experimental sorption data. Oat starch was hydroxypropylated by addition of 30 ml propylene oxide at 40°C for 24 hours. Then, gelatinized starch was produced using 5 g native and modified starch with 100 ml distilled water by casting method. The moisture sorption isotherm of starches were studied at various relative humidities (11, 22, 38, 65, 74 and 84% RH), at 5, 15, 25 and 40 °C. The equilibrium moisture content of the gelatinized oat starch increased dramatically above $a_w=0.4$. Guggenheim-Anderson-deBoer (GAB), Brunauer-Emmett-Teller (BET) and Peleg sorption models were fitted to the experimental data. The results showed that hydroxypropylation and reduction of the temperature enhanced the equilibrium moisture content and monolayer water (M_0) of the gelatinized oat starch. The GAB and Peleg models were found to be the best-fit models for gelatinized native and hydroxypropylated starches, respectively.

کلمات کلیدی:

Hydroxypropylation, Oat Starch, Sorption Isotherm Models

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