

Temperature-Associated Proton Dynamics in Wheat Starch-Based Model Systems and Wheat Flour Dough Evaluated by NMR

Wheat starch-based model systems and wheat flour dough with the same water content (close to 45 %) were investigated upon heating (20'90 °C) using time-domain ¹H NMR spectroscopy with the aim of assigning each spin-spin relaxation time (T₂) measured to a specific proton fraction. On the basis of the signal evolution according to Curie's law for pure starch and pure water, temperature-associated changes for each T₂ value and their mass intensity were interpreted and assigned to water and/or biopolymer proton fractions related to the reversible swelling of starch or its gelatinization. The addition of 2 % (w/w) salt to model samples and dough induced few changes during the reversible swelling process but impacted on the measurements performed above 60 °C. Finally, studies performed on starch-based model systems improved understanding of the complex thermal processing of starch in dough by taking into account phenomena other than the starch swelling and gelatinization, such as gluten denaturation and changes in water-biopolymer interactions.

Auteurs du document : Rondeau Mouro, C., Cambert, M., Kovrlja, R., Musse, M., Lucas, T., Mariette, F.

Mots clés : PAIN, GELATINISATION, RESONANCE MAGNETIQUE NUCLEAIRE, RELAXATION MAGNETIQUE, GONFLEMENT, CALORIMETRIE, SPECTROSCOPIE, CUISSON, DIFFERENTIAL SCANNING CALORIMETRY, LOW-FIELD H-1-NMR, MOLECULAR MOBILITY, WATER INTERACTIONS, POTATO STARCH, GELATINIZATION, BREAD, JELLIFICATION, NMR SPECTROSCOPY, SWELLING, CALORIMETRY, SPECTROSCOPY, FECULE, GLUTEN, COOKING, MAGNETIC RELAXATION

Date : 2015

Format : text/xml

Source : 38967

Langue : Inconnu

Droits d'utilisation : Date de dépôt: 2015-01-07 - Tous les documents et informations contenus dans la base CemOA Publications sont protégés en vertu du droit de propriété intellectuelle, en particulier par le droit d'auteur. La personne consultant la base CemOA Publications peut visualiser, reproduire, ou stocker des copies des publications, à condition que l'information soit seulement pour son usage personnel et non commercial. L'utilisation des travaux universitaires est soumise à autorisation préalable de leurs auteurs. Toute information relative au signalement d'une publication contenue dans CemOA Publications doit inclure la citation bibliographique usuelle : Nom du ou des auteurs, titre et source du document, date et URL de la notice (dc_identifiant).

Télécharger les documents : <https://irsteadoc.irstea.fr/cemoa/PUB00043110>

Permalien : <https://www.documentation.eauetbiodiversite.fr/notice/temperature-associated-proton-dynamics-in-wheat-starch-based-model-systems-and-wheat-flour-dough-eva0>

Evaluer cette notice: