Textural Properties of Romanian Petit Beurre Biscuits

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SUMMARY

Recent trends in the food industry are the development of foods of dry crispy texture, trends which are due to the high consumer demand for ready-to-eat foods with good nutritional and organoleptic qualities and a sufficient shelf-life.

Six petit beurre biscuits type produced in Romania were choose to be tested for fracture properties as fresh (10 minutes after package opening) and after 14 days at room temperature (24°C and 45% relative humidity): Petit beurre sweet 1, Petit beurre sweet 2, Petit beurre sweet 3, Petit beurre cacao, Petit beurre coconut, and Petit beurre milk.

There parameters which were analyzed are: maximum load, maximum deflection, maximum bending stress at maximum load, maximum bending stress at maximum deflection, Young's modulus of bending, flexural rigidity, toughness and the modulus of rupture which may be correlated to crispiness and hardness as textural properties. These rheological parameters may be correlated with textural parameters such as hardness and crispiness. The three point bend test is an objective method to characterize the response of the products to packaging, manipulation and transportation as well as the consumer perception of the product after storage in normal room environment.

The Texture Analyser TA Plus, Lloyd Instruments (Nexigen Plus software) with a three point bend device of original design was used for testing fracture properties. The test speed was 2mm/minut. Although the petit beurre sweet biscuits are produced using a similar technology there are recipe differences of ingredients such as spices and probably flour quality. These differences generated distinct fracture behavior in this food group.

After 14 days all textural properties were significantly modified for all biscuits. Some of the biscuits being less influenced by temperature and constant humidity such as petit beurre coconut while petit beurre milk were highly influences by storage in an open atmosphere.

The maximum fracture force of Petit beurre sweet 3 is not significantly different of Petit Beurre milk maximum fracture force. These two cathegorie of biscuits being the hardest ones. For the Petit beurre coconut, Petit Beurre cacao, and Petit Beurre sweet 1, no significant differences have been found for the maximum fracture force.

The lowest fracture force was obtained for the Petit beurre sweet 2. The hardest biscuits are found to be Petit beurre milk, the softest being Petit beurre 2.

The crispiest biscuits tested are petit beurre sweet 1 while Petit beurre sweet 3 and Petit beurre milk are the less crispiest of all.