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Abstract

Setup of ASLT Parameters for Evaluation of the Shelf-Life for the New Dry Snack Food Product †

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Abstract: A challenge in the development process for the new products is represented by the stability study and the determination of the shelf-life of the products that will be launched on the market. Often, these important characteristics, for success on the market, are needed without having the necessary time available for a real-life study. The purpose of this research was to study the physico-chemical and microbiological processes of degradation to set the Accelerated Shelf-Life Testing (ASLT) parameters for a new dry snack food product development. The experimental samples of dry snack food formulations were stored in certain conditions of temperature, humidity and light (accelerated degradation process) for a total period of 30 days. After the final period of storage to evaluate stability over time, the product was subject to a physical-chemical analysis to determine the following parameters: moisture content and activity of water. Microbiological analysis regarding Total Plate Count (TPC) was performed also on the stored samples to highlight the microbiological growth. After performing the analysis, the intervals for the degradation process parameters were established: temperature (35 °C, 45 °C, 55 °C), humidity (65%, 75%, 85%), and light (on/off). These data will be used later for the development of the accelerated aging model to evaluate the shelf life for a new dry snack food product. The water activity (a_w) must be below the value of 0.75, the moisture content between 4% and 6% and for microbiological analysis TPC below 10^4. The greatest influence in the depreciation of the product was the temperature, which led to physico-chemical and microbiological changes. Given the light and the vapor barrier provided by the product packaging, the other depreciation factors (humidity, light) did not have a significant influence on the depreciation of the product.

Keywords: ASLT; physico-chemical process; microbiological growth; dry snack

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