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Quality of Hermetically Packaged Split Peas During Long-term Storage

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Abstract

There is a market for low moisture trades that can be stored for long periods of time in use for disaster relief and other emergencies. Split pea hermetically sealed in cans having a natural rubber membrane are available in the retail market, but the effect of long-term storage on the quality of the product is unknown. Nine samples of split peas representing 3 retail brands packaged in 12 oz., 330 ml cans at 3 different storage conditions were obtained from donors. Two fresh samples of split peas were purchased as controls. Samples ranged in age from 1 to 34 years. The 330 ml cans were opened and all products were removed from the cans. A 52-member consumer panel evaluated the split pea soup for appearance, aroma, texture, flavor, and overall acceptability. The samples were ranked using hedonic scale (1 = dislike, 10 = like). Thiamin and riboflavin values were determined using high performance liquid chromatography (HPLC) and a Thermo Quest LCMS. Analysis of variance was calculated using MINITAB. Chi-square analysis was conducted using Microsoft Excel. Conclusions

Conclusions

There was a lack of some quality attributes of the split peas as evaluated by consumers. Sample age increased such as thiamin levels, sensory scores, and texture. Thiamin was lower in sample older than 17 years, but riboflavin was not significantly different. Emergency canned peas were more highly recommended than regular cans, but were not suitable for hermetic seal cans. It is advisable to maintain the hardness of the pea which, as measured objectively, increased with sample age. Inhumus (a mixed dried soil of split peas) in small, there may be other factors in the food that could improve the shelf life and the quality of the food. Split pea can become an important part of a long-term storage plan because of its general stability even when properly packaged.

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Results and Discussion

Headspace Oxygen, Can Seams, Water Activity, Color, and Texture

Thiamin and Riboflavin

Values range from 2.5 to 8.1 mg/g of sample. The USDA database value of 5.4 mg is higher than most found in this study.  Table 3 shows the degree to which the samples differed from the USDA value. A value of 2.37 for the thiamin means that the thiamin content of the sample was 2.37 times the expected value. The overall range was from 1.46 to 3.17. The “hard” samples were found to be 100% correlated with the 56.9% of the variation in the results. Thiamin and riboflavin values were determined using high performance liquid chromatography (HPLC). One of the most reliable ways to determine the quality of a household is to check the moisture content. To check the moisture content, samples were analyzed for water activity (Aw). Water activity values of the samples ranged from 0.56 to 0.61 (Figure 2). CIE L* values ranged from 43.5 to 53.5 (Table 1). Table 1 shows the values for 4 to 28. CIE L* values were significantly increased by the age of the samples. The riboflavin values were also determined and the results show that samples were hermetically sealed for the past 34 years (Figure 7). The values were determined using high performance liquid chromatography (HPLC) and a Thermo Quest LCMS. Analysis of variance was calculated using MINITAB. Chi-square analysis was conducted using Microsoft Excel. Conclusions

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