Quality of regular and parboiled rice in long-term storage

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There is interest in storing food for long periods of time and developing food products that are shelf-stable and can withstand long periods of time, especially for use in emergency and disaster situations, military rations, and for space travel. Rice hermetically sealed in cans and treated to reduce oxygen levels is one method that has been used to store rice in long-term storage. There is a market for food products that will store for long periods of time and should be included in long-term food storage systems.

ABSTRACT

Sensory Evaluation

A descriptive sensory evaluation panel evaluated the sensory quality of the rice. Samples were prepared with the same method as for the gas chromatography analysis and then transferred to steam tables where they were heated. The rice was evaluated by a trained sensory panel for appearance, aroma, texture, flavor, and overall acceptability using a 9 point hedonic scale with 9 being the highest. Acceptance was determined by asking the panelists if the rice would be acceptable for everyday use and if they would eat it in an emergency situation.

RESULTS AND DISCUSSION

The slope for age overall acceptability for regular rice was significantly different from the slope for parboiled rice, meaning that parboiled rice decreased over time in overall acceptability. There was no correlation between the amount of oxygen and the sensory quality of the rice. There also was no significant correlation between texture and the sensory quality of the rice.

Both types of rice had greater than 88% acceptance for everyday use, while the percentage of acceptance did not significantly decrease over time. The acceptance for regular rice was significantly higher than the acceptance for parboiled rice in everyday situations. The acceptance for regular rice decreased over time in everyday situations but did not significantly decrease over time. The acceptance for parboiled rice decreased over time in everyday situations but did not significantly decrease over time. The percentage of acceptance for parboiled rice was significantly lower than the percentage of acceptance for regular rice. The percentage of acceptance for parboiled rice was significantly lower than the percentage of acceptance for regular rice.

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Thiamine and Headspace Hexanal

No significant trend over time was found for either hexanal or thiamine. The levels of hexanal in parboiled rice decreased over time, while the levels of hexanal in regular rice remained relatively constant. The levels of thiamine in parboiled rice decreased over time, while the levels of thiamine in regular rice remained relatively constant.

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