Effects of long-term storage on quality of regular and quick rolled oats

M. B. McEwan
mcewan.m@gmail.com

Lynn V. Ogden

See next page for additional authors

Follow this and additional works at: https://scholarsarchive.byu.edu/facpub

Part of the Food Science Commons, and the Nutrition Commons

Original Publication Citation

BYU ScholarsArchive Citation
McEwan, M. B.; Ogden, Lynn V.; and Pike, Oscar A., "Effects of long-term storage on quality of regular and quick rolled oats" (2003). All Faculty Publications. 39.
https://scholarsarchive.byu.edu/facpub/39

This Poster is brought to you for free and open access by BYU ScholarsArchive. It has been accepted for inclusion in All Faculty Publications by an authorized administrator of BYU ScholarsArchive. For more information, please contact scholarsarchive@byu.edu, ellen_amatangelo@byu.edu.
Authors
M. B. McEwan, Lynn V. Ogden, and Oscar A. Pike

This poster is available at BYU ScholarsArchive: https://scholarsarchive.byu.edu/facpub/39
**ABSTRACT**

There exists a need for food packaging for long-term storage, for such uses as emergency relief efforts, military rations, and personal storage in remote locations. The purpose of this research was to investigate the quality of regular and quick rolled oats. Twenty-three samples of rolled oats packed in foil and stored for >28 years were used in this study.

**INTRODUCTION**

Traditional shelf life studies of cereal staples have investigated over a period of several weeks or months. Researchers have found that rolled oats stored 3 years at 38°C still had acceptable sensory properties. However, there is a market for products that will last much longer periods of time to be used as emergency relief efforts, military rations, and personal storage. Rolled oats in hermetically sealed cans are available on the retail level, but little work has investigated the effects of long-term storage on quality.

The objective of this research was to investigate the quality of regular and quick cooking rolled oats packaged in cans for long-term storage.

**METHODOLOGY**

**Samples**

Twenty-three samples of rolled oats packaged in foil for >28 years were used in this study. Samples included ten types of rolled oats from five states, all of which were donated to the researchers by individual donors. Samples were obtained from: Harold B. Lee Library, Provo, UT.

**Analysis**

**Headspace hexanal**

**Vitamin E**

**RESULTS**

**SAMPLE 1**

Vitamin E levels varied significantly among brands, with values ranging from 1.22 to 7.32 μg/g (Fig. 6). The USDA Nutrient Database for Standard Reference indicated that the recommended daily intake of vitamin E is 15 mg (0.50 μg/g). Approximately half the samples had total levels similar to this level, indicating that it is possible to store rolled oats such that the low levels of vitamin E would not be a concern.

**SAMPLE 2**

Headspace hexanal concentrations varied from 0.002 to 0.138 μg/g. The two heat abused samples had hexanal values that were significantly higher than the other samples in the study. Aroma was measured using the method of Peterson (1995) with a normalized phase headspace analyzer (APHA, 1995). Results (Fig. 5) indicated that even after 28 years of storage, 95% of rolled oats retained a quality atmosphere. The results indicate that there were no significant differences between the two types of rolled oats.

**SAMPLE 3**

All samples were considered acceptable. The analyses indicated that all samples contained nutrients that were within the recommended daily intake levels. All samples were also below the maximum levels of contaminants.

**REFERENCES**


**ACKNOWLEDGEMENTS**

The authors appreciate the funding for this research provided by the Fulkens and the contributions of the following individuals: Devon Rose, Aram Shvan, Liron Bais, Yael Ovadia, Yael Fermoselle, Ayelet Lloyd, Theresa Grib, Melanie Huling and Jingyi Zhou.