

'Sweet wheat' for tastier and more healthful baking

May 25 2011

"Sweet wheat" has the potential for joining that summertime delight among vegetables — sweet corn — as a tasty and healthful part of the diet, the scientific team that developed this mutant form of wheat concludes in a new study. The report appears in the ACS' *Journal of Agricultural and Food Chemistry*.

Just as sweet corn arose as a mutation in field corn — being discovered and grown by Native American tribes with the Iroquois introducing European settlers to it in 1779 — sweet wheat (SW) originated from mutations in field wheat. Toshiki Nakamura, Tomoya Shimbata and colleagues developed SW from two mutant types of wheat that each lack a different enzyme needed to make starch. Because the new wheat has much more sugar than regular wheat, they called it "sweet wheat." To see whether the flour from this new wheat could be used as an ingredient in foods, such as breads and cakes, the researchers analyzed its components.

They found that SW flour tasted sweeter, and SW seeds and flour contained higher levels of sugars, lipids and dietary fiber than seeds and flours of other wheat varieties. "The specific compositional changes that occurred in SW seed suggest that SW flour may provide health benefits when used as a food ingredient," say the researchers, noting its high levels of healthful carbohydrates termed fructans.

More information: High Levels of Sugars and Fructan in Mature Seed of Sweet Wheat Lacking GBSSI and SSIIa Enzymes, *J. Agric. Food*



Chem., 2011, 59 (9), pp 4794–4800. DOI: 10.1021/jf200468c

Abstract

Sweet wheat (SW), which lacks functional granule-bound starch synthase I (GBSSI) and starch synthase IIa (SSIIa), accumulates high levels of free sugars in immature seeds. Here, we examined the effects of the lack of these two enzymes on mature kernel composition. Whole grain flour of SW had higher levels of sugars, particularly maltose, slightly higher ash and protein content, approximately two to three times higher lipid levels, and about twice as much total dietary fiber as parental or wildtype lines. Considerably higher levels of low-molecular-weight soluble dietary fiber (LMW-SDF), largely consisting of fructan, were also detected in SW. Although there were no differences in total amino acid levels, the free amino acid content of SW was approximately 4-fold higher than that of wild type, and the levels of certain free amino acids such as proline were particularly high. Thus, we were able to clearly demonstrate that the lack of GBSSI and SSIIa caused dramatic changes in mature seed composition in SW. These compositional changes suggest that SW flour may provide health benefits when used as a food ingredient.

Provided by American Chemical Society

Citation: 'Sweet wheat' for tastier and more healthful baking (2011, May 25) retrieved 27 April 2024 from <u>https://phys.org/news/2011-05-sweet-wheat-tastier-healthful.html</u>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.