

Purple wheat products: Potential anti-oxidative stress and anti-inflammatory functional foods

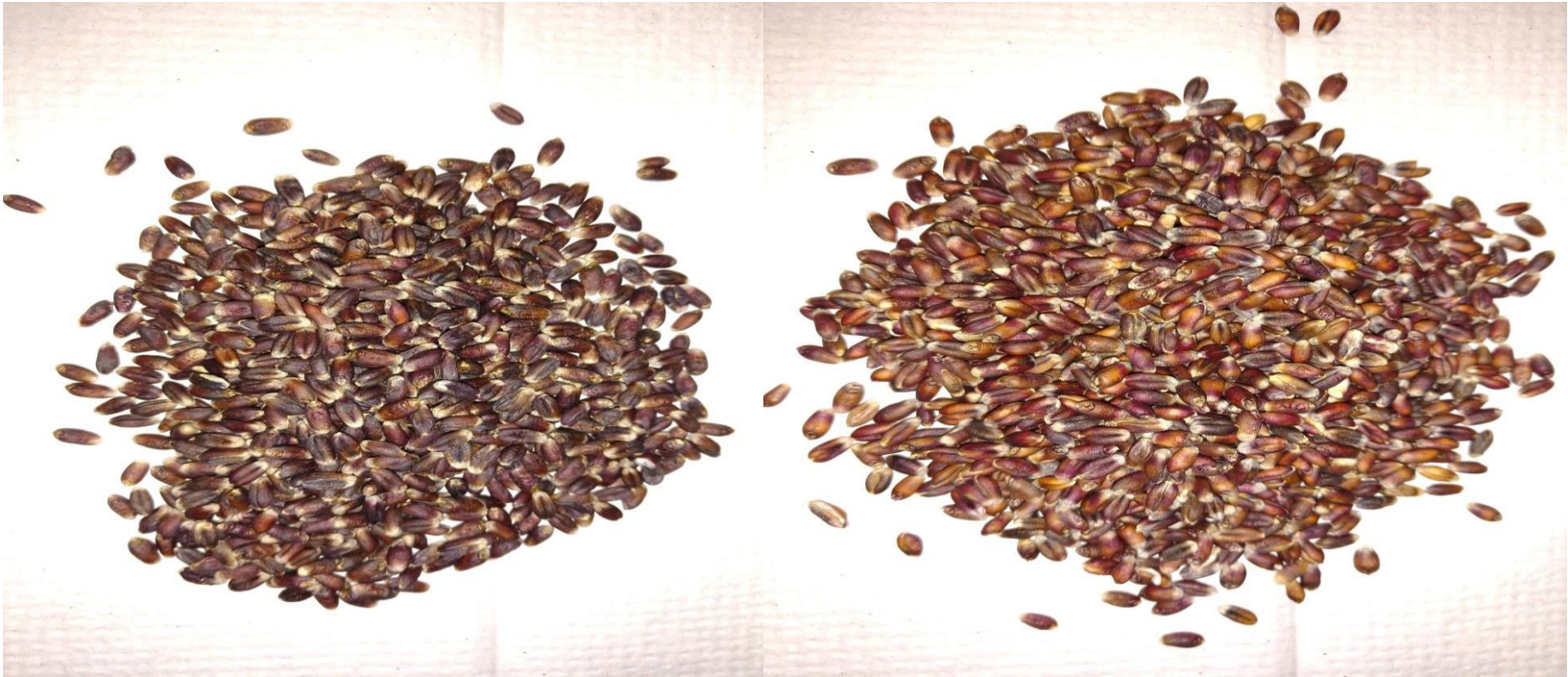
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- Introduction

Purple Wheat

Purple wheat is a Canadian wheat cultivar enriched in anthocyanins, which are located in the pericarp.



It was developed in Saskatchewan in the late 1990s and now it is commercially distributed under the name of **ANTHOGRAIN** as an ingredient for use in various grain and cereal products by Infra-Ready LTD, SK.

Purple Wheat

The total **anthocyanin** content of the wholegrain ranges from 96 $\mu\text{g/g}$ to around 235 $\mu\text{g/g}$.

The bran fraction can have up to 1400 $\mu\text{g/g}$ **anthocyanin**.

Cyanidin-3-glucoside (Cy-3-glc) is the main anthocyanin.

Total phenolic acids can reach up to 900 $\mu\text{g/g}$ in the wholegrain and 3000 $\mu\text{g/g}$ in the bran.

Ferulic acid is the main phenolic acid.



- **Nutrition & Health benefits of
Purple wheat**

Consumption of food-containing high level of phenolic compounds including anthocyanins and phenolic acids have proven to exhibit several health benefits

Antioxidant and anti-oxidative stress

Lipids lowering effect

Anti-diabetic properties

Anti-carcinogenic effect

Anti-inflammatory effect

Dykes & Rooney 2007

Guo et al. 2009.

Shipp & Abdel-Aal 2010.

Majority of human studies have conducted with fruit and vegetables.

Limited information regarding the absorption and possible health impacts of anthocyanins and phenolic acids from processed grain foods.

Anthocyanin-pigmented wholegrain products showed potential as functional foods (e.g. Blue and purple wheat Blue corn, black rice) and some start to gain market popularity.

1st Human clinical study

March 2015 - April 2016

Identification of anthocyanin and phenolic acid metabolites in plasma and urine of healthy adults after consumption of bran-enriched purple wheat bars and crackers and tracking plasma postprandial total antioxidant capacity and short-term markers of inflammation.

The study was conducted at Human Nutraceutical Research Unit (HNRU) - University of Guelph.

The study was approved by the Human Research Ethics Board (REB) of the University of Guelph (15JN008) and registered at ClinicalTrials.gov (NCT02730910).

2nd Human clinical study

June 2016 - September 2017

Effect of consumption of wholegrain wheat anthocyanin-enriched conveniences bars for eight weeks on oxidative stress and inflammatory responses compared to wholegrain ordinary wheat bars in over weight and obese adults with chronic inflammation.

The study was conducted at Human Nutraceutical Research Unit (HNRU) - University of Guelph.

The study was approved by the Human Research Ethics Board (REB) of the University of Guelph (16MR006) and registered at ClinicalTrials.gov (NCT02840357).

Key points

- ▶ This study is the first to report on the digestion, absorption and physiological impact of anthocyanins and phenolic acids from purple wheat products in animals, including humans.
- ▶ The results of this project will help understanding the characteristics, antioxidant status, physiological effect and the health aspect of purple wheat based anthocyanin-enriched products.
- ▶ It will support further development and marketing of purple wheat products as a potential healthy food choice.

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Purple wheat study participants

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Phlebotomists team

THANK YOU
QUESTIONS

