



*Il sorgo, la risposta
a un'agricoltura
che guarda al futuro.*

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Convegno - Ozzano Emilia (BO) 21 novembre 2019



SORGO, ALIMENTO FUNZIONALE

Sorghum-ID "Il sorgo, la risposta ad un'agricoltura che guarda al futuro"
Aula Messieri del Dipartimento di Scienze Mediche Veterinarie dell'Università di
Bologna
Ozzano Emilia (BO), 21 Novembre 2019

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DATI NUTRIZIONALI

La composizione chimica del sorgo è estremamente interessante da un punto di vista nutrizionale poiché molta fibra (circa 80%), proteine (11%), lipidi (2-3% superiore a quella del grano e del riso).

La modesta quantità di proteine è comunque rappresentata da alcuni aminoacidi essenziali, ma manca di lisina. Per ovviare a questa carenza un piatto di pasta di sorgo condita con una purea di fave e ceci consente di avere un'assimilazione completa di aminoacidi.



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DATI NUTRIZIONALI

Il sorgo è altamente digeribile e facilmente assimilabile, oltre a contenere importanti sali minerali come ferro, calcio, potassio e vitamine come la niacina (Vitamina B3) e la vitamina E (la stessa contenuta nelle noci per esempio).

Contiene inoltre antiossidanti naturali come fitosteroli e flavonoidi che contribuiscono ad abbassare l'incidenza di cancro, diabete e malattie cardiovascolari.

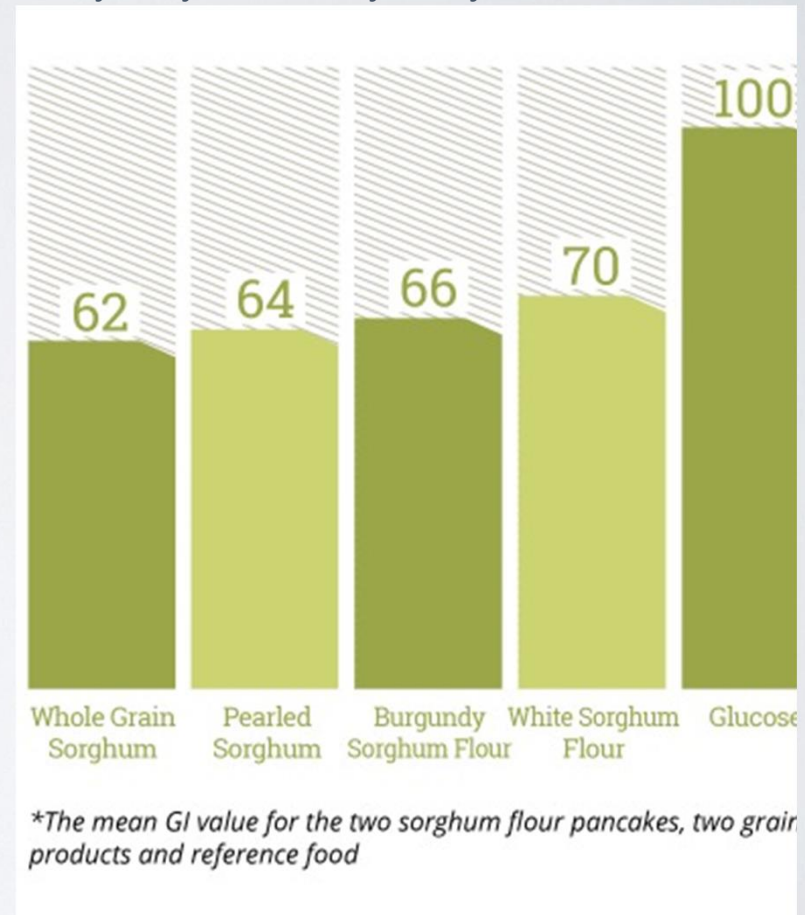


STUDI

Grazie alla sua composizione può essere usato per controllare il diabete, offrire un'opzione alimentare alle persone che soffrono di celiachia, migliorare la salute dell'apparato digerente, migliorare la densità delle ossa.

“The analysis included whole grain sorghum, pearled sorghum, whole grain burgundy sorghum flour and whole grain white sorghum flour. The values for whole grain sorghum and pearled sorghum were 62 and 64, respectively. Burgundy sorghum flour and whole grain white sorghum flour values were 66 and 70, respectively. Both flour and grain values were significantly different ($p < 0.001$) from the glucose standard with a GI of 100, but were not significantly different from each other.”

Sydney University's Glycemic Index Research



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1. J Sci Food Agric. 2019 Feb;99(3):1351-1357. doi: 10.1002/jsfa.9310. Epub 2018 Sep 28.

Gluten-free sorghum pasta: starch digestibility and antioxidant capacity compared with commercial products.

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Abstract

BACKGROUND:

The development of new products with a focus on nutrition, rather than other technical aspects, is essential to improve the quality of celiac diets. Nutritional attributes of white and brown sorghum gluten-free pasta developed in a previous work were analyzed. The extent and kinetics of starch in vitro digestion, estimated glycemic index (eGI), potentially bioaccessible and dialyzable polyphenols, and antioxidant activity were evaluated and compared with commercial products.

RESULTS:

Sorghum flour samples were used to obtain pasta with high protein ($\approx 170 \text{ g kg}^{-1}$), dietary fiber ($\approx 80 \text{ g kg}^{-1}$), polyphenols (2.6 g GA kg^{-1} pasta), and antioxidant activity. This sorghum pasta showed slower starch in vitro digestion than the other gluten-free pasta, with a high level of protein hydrolysis (76%). The highest eGI was observed in a rice sample (69.8) followed by a corn-based pasta (66.4). White and brown sorghum gluten-free pasta showed 2.9 and 2.4 times, respectively, higher potentially bioaccessible polyphenol content compared to that in cooked pasta. No significant variation in antioxidant activity was found in sorghum pasta after digestion and around 48% and 36% of activity was detected in dialysate.

CONCLUSION:

Both types of sorghum gluten-free pasta have demonstrated their nutritional value and represent a good potential alternative to current commercial pasta. © 2018 Society of Chemical Industry.

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Short Communication

A SCITECHNOL JOURNAL

Effects of Sorghum Pasta Production Techniques on Health and on Protection of Nutritional Values

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Received Date: May 5, 2018 Accepted Date: June 19, 2018 Published Date: June 24, 2018

Abstract

Sorghum is a cereal of strategic importance both for human and animal nutrition due to special nutritional characteristics and the adaptability to warm climates, such as the African one. Many studies focus primarily on the effects on diabetes and on prevention, or on oncological disease. If established; more rarely it is analysed the techniques of cultivation and transformation, with attention to the production of pasta. Sorghum is an essential food component of the Mediterranean diet and in gluten free formulations it is often composed of flours, emulsifying additives and water. What are the effects of certain additives is yet to be determined especially on individuals affected by nutritional and intestinal disorders.

Keyword: Sorghum; Sorghumpasta; Nutraceutical; Functional Food; Glutenfree Pasta

Introduction

In 1998 I started suffering from irritable bowel syndrome (IBS), Crohn's disease and gastroesophageal reflux. Doctors, years ago, had no literature on these diseases and limited to treating the symptom with painkillers and drugs to inhibit the gastric pump. It was after endless research that I understood the possible correlations between disease and nutrition [1]. I started to investigate agronomic techniques, cultivation, genetic improvements of cereals, conservation techniques and transformation of raw materials up to the pasta production. The attention went immediately to the sorghum; cereal that does not need constant artificial irrigation because of the ancient seed is genetically predisposed to climate adaptation. It does not even need nitrogenous soils or conventional fertilizers [2]. The grains obtained from organic farming are milled and transformed into flour with blond granulometry, which results in less water absorption. The result is a solid dough which, drawn in bronze, keeps the shape of the dough without breaking. The prolonged drying after 19 hours at low temperature

guarantees the evaporation of excess water and the maintenance of the structure, as well as the lower dispersion of nutrients [3]. Drying at high temperatures in a short time (HTSt High Temperature-Short time, VHTs Very High Temperature-Short time) creates a measurable thermal damage from the amount of furosine present in the paste. Pasta with values of furosina lower than 200, is considered a product with a good index of nutritional quality, because the quantity of essential aminoacids such as lysine remains high. When a value of 5/600 is found (in durum wheat pasta), it means that the drying temperature is very high and in these cases the bioavailability of the lysine undergoes a strong downsizing [4]. The pasta production technique described above does not require emulsifiers or aggregates such as mono and diglycerides, contrary to what is indicated in some studies of standardization of production techniques [5]. A pure food that is rehydrated in cooking water in a very short time about 4min, with minimal dispersion of nutrients. The nutritional analyzes show that the sorghum maintains the nutritional values and has high digestibility thanks to the amount of starches and fibers [6].

Conclusion

The amount of iron and phosphorus suggests a relevance in countering the side effects of chemotherapy; the study started on 7 April 2017 is still open and will soon give us results both with objective data (blood values) and subjective data (perception of quality of life). We analyze the effects of a diet with daily intake of sorghum pasta in chemotherapy patients with colon and breast cancer.

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