



SORGHUM CHECKOFF

Information

Nutritional Attributes of Grain Sorghum

Macronutrients Sorghum is an excellent source of energy, containing about 75% complex carbohydrate. Complex carbohydrates (fibers and starches) are usually digested slowly and therefore provide satiety and delayed hunger. Sorghum flour is often whole grain and thus aligns well with the 2010 Dietary Guidelines to increase dietary whole grains while keeping the suggested total dietary carbohydrate intake the same (1). A Nutrient comparison of the commodity grains — sorghum, wheat, corn, and rice— shows that with about 3.3% fat content, grain sorghum contains more fat than wheat and rice, but slightly less than corn. Sorghum and wheat grain contain similar amounts of protein (~11-12%) while both contain more protein than rice and corn (~6-9%) (2). Sorghum is naturally gluten free.

Micronutrients A comparison of 100 g of commodity sorghum to the World Health Organization (WHO) Recommended Nutrient Intakes (RNI) (3-5) for children ages 1-3 years shows the following micronutrients are met: Magnesium = 366% RNI; Iron based on 10% bioavailability = 73% RNI; Zinc based on moderate bioavailability = 38% RNI; Thiamin = 47% RNI; Riboflavin = 28% RNI; Niacin = 49% RNI; Pantothenate = 63% RNI; Vitamin B-6 = 118% RNI. WHO does not have an established RNI for copper and manganese, thus using the United States Recommended Dietary Allowance (RDA) (6) criteria, 100g sorghum meets the RDA for children ages 4-8 years as follows: Copper = 245% RDA; Manganese = 92% RDA.

Iron and zinc are two of the four micronutrients (iron, zinc, iodine, vitamin A) identified (7) as at risk in populations of developing countries. Sorghum is a good to excellent source of iron and zinc. Sorghum is rich in B complex vitamins that play a major role in energy metabolism. Sorghum's high-energy content and ready supply of B-complex vitamins are a perfect combination for energy utilization.

Phytochemicals Depending on the variety, sorghum provides good to excellent sources of such phytochemicals as phenolic acids, anthocyanins, phytosterols and policosanols. These compounds are familiar to the public as a result of health claims around sterols and stanols (heart health) and the publicity attributed to the anti-oxidant properties of anthocyanins (pigmented berries-blueberries, strawberries, etc.). Awika and Rooney (8) provide an excellent review of the potential health benefits of phytochemicals in sorghum. One category of phytochemicals, condensed tannins – regardless of grain color- is not found in U.S. sorghum varieties and most sorghum produced elsewhere (8).

1. Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans (2010). USDA.

2. USDA National Nutrient Database for Standard Reference, Release 24. 2011.

3. FAO/WHO Expert Consultation on Human Vitamin and Mineral Requirements. 1998.

4. FAO/WHO/UNU Report of a Joint Expert Consultation on Human Energy Requirements. 2001.

5. WHO/FAO/UNU. Protein and Amino Acid Requirements in Human Nutrition. Report No. 935. 2007.

6. Food and Nutrition Board. Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium and Zinc. National Academy Press, Washington, D.C. 2001

7. Committee on Micronutrient Deficiencies, Prevention of Micronutrient Deficiencies: Tools for Policymakers and Public Health Workers. (CP Howson, ET Kennedy and A Horwitz, Eds), National Academy Press. Washington, D.C. 1998.

8. Awika, JM and Rooney, LW. Sorghum phytochemicals and their potential impact on human health. Phytochemistry 65;1199-1221. 2004.