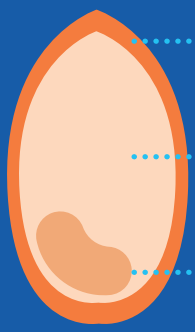
Health & Nutrition Sciences

The "Whole" Picture: Nutritional Aspects of Whole Grains

What is a whole grain?

Whole grains consist of the intact, ground, cracked, flaked or otherwise processed kernel after the removal of inedible parts such as the hull and husk[1].

All anatomical components, including the endosperm, germ, and bran must be present in the same relative proportions as in the intact kernel[1].



The bran – is the multi-layered outer skin of the edible kernel. It contains important antioxidants, B vitamins and fibre[2]

The endosperm – is by far the largest portion of the kernel. It contains starchy carbohydrates, proteins and small amounts of vitamins and minerals[2]

The germ – is the embryo which has the potential to sprout into a new plant. It contains many B vitamins, some protein, minerals, and healthy fats[2]

Whole grains are an important source of essential nutrients

- **B Vitamins**
  Thiamin, Niacin, Riboflavin, Pantothenic acid, Vitamin B6, Folate[3]
- **Minerals**
  Magnesium, Phosphorous, Manganese, Zinc, Selenium, Copper and Iron[3]
- **Dietary Fibre**[3]

Potential health benefits of consuming whole grains

HEART HEALTH

Several systematic reviews and meta-analyses have found inverse associations or risk reductions between whole grain consumption and outcomes of coronary heart disease[4,5].

BODY WEIGHT

Observational studies[6] and randomised control trials[7] suggest that a higher intake of whole grains is associated with a lower risk of weight gain. However, further epidemiological and intervention studies are needed to address the limitations observed in the current body of evidence, with a consistent definition of whole grain needed.

CANCER

Recent systematic reviews and meta-analysis focusing on whole grains, refined grains and cancer risk indicated that whole grain consumption is associated with lower risk of total cancer mortality and that whole grain intake is consistently associated with a lower risk of some cancers[8,9].

TYPE 2 DIABETES

A review of three large cohort studies conclude that higher consumption of total whole grains and several commonly eaten whole grain foods are significantly associated with a lower risk of type 2 diabetes[10,11].

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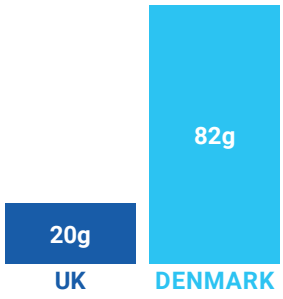
Recommended vs. current intakes of whole grains

There is currently no quantitative recommendation in the UK for whole grain consumption[12]. The Eatwell Guide recommends choosing whole grain or higher fibre versions of starchy foods, such as wholemeal bread, brown rice and wholewheat pasta[13].

Some countries in Europe have set specific recommendations, such as Denmark who recommend eating '75g of whole grain per day or more'[14] and the Netherlands who recommend to 'Eat at least 90 grams of brown bread, wholemeal bread or other whole grain products daily'[15].

Whole grain intake is not reported in all national dietary surveys. The intake of whole grains in UK adults was estimated at 20g per day[16]. This is low compared to Denmark, for example, where whole grain intake is estimated at 82g per day[17].



Identifying whole grain foods

LOOK FOR THESE WORDS ON THE LABEL:

- Wholegrain [name of grain] such as 'Wholegrain Corn'
- Whole [name of grain] such as 'Wholewheat'

INGREDIENTS: WHOLEGRAIN RICE (46%), MAIZE (WITH GERM REMOVED), SOUR CREAM AND CHIVE SEASONING [FLAVOURINGS (CONTAIN MILK), SALT, SUGAR, ONION POWDER, WHEY POWDER (FROM MILK), POTASSIUM CHLORIDE, DRIED PARSLEY, ACID (CITRIC ACID), SPICES]

Certain foods can help contribute to daily whole grain intake – examples include:

- Oats
- Whole grain breakfast cereals

- Wholemeal bread

- Whole grain rice cakes
- Whole grain crackers
- Popcorn

- Brown rice
- Wholewheat pasta
- Buckwheat
- Maize (corn)

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