

## Buckwheat Soba: its health benefits based on scientific studies

The Japanese word for buckwheat is soba.

Authentic soba noodles are made with buckwheat flour and water. The *juwari* designation is ten portions of buckwheat out of ten. Soba noodles can be prepared with a proportion of refined wheat flour and sometimes added salt. For example, the *hachiwari* designation is eight portions of buckwheat out of ten, and two portions of wheat. Such preparations have different health consequences and are not examined here.

Please note that buckwheat is not scientifically related to wheat, despite the overlap in their names. It is not a grain, but rather the seed of the herbaceous buckwheat plant.

**Fig.1 Buckwheat field**



Source: Pixabay, Conceptasia, June 2022

The study “Buckwheat: A Useful Food and it’s Effects on Human Health” <sup>(1)</sup> concludes:

*Buckwheat is a food with rich nutrient content and important functional properties. In addition, it does not lose these properties in the processing stages, it also enriches the products it is added to both nutritionally and functionally. Because of these properties, it can show positive effects such as antioxidant, antihypertensive, antidiabetic on human health.*

We first look at buckwheat’s nutritional content. Next, we look at the possible major health benefits.

**Fig.2 Buckwheat raw groats/hearts**



Source: Pixabay, Conceptasia, June 2022

## Buckwheat's composition

Buckwheat is a valuable food source, rich in protein, lipids, dietary fibre, and minerals. The amino acid composition and nutritional value of buckwheat are superior to other grains.

1. Carbs: Buckwheat performs well on the speed by which food increases the blood sugar level after consumption. Slow, spread out, is better. Buckwheat's score on the glycemic index is low to medium, reflecting it being a complex carbohydrate. In contrast, white bread is a simple carbohydrate.
2. Fibre: Good for but health, buckwheat contains a good amount of fibre, mainly cellulose and lignin. Fibre is concentrated in the husk, which is kept in dark buckwheat flour.
3. Protein: especially rich in the amino acids of lysine and arginine.
4. Vitamins: Thiamin, Riboflavin, Niacin, Folate, Vitamin K, Vitamin B-1, B-2, B-3, and B-6.<sup>(?)</sup>
5. Minerals: Buckwheat has more mineral content than rice, wheat or corn. Manganese, Copper, Magnesium, Iron, Phosphorus, Zinc, Selenium, Sodium, and Calcium. Relative to other grains and seeds, buckwheat has relatively less phytic acid. This is good, because phytic acid inhibits the absorption of minerals.
6. Additional Plant compounds: Rutin, Quercetin, Vitexin, and D-chiro-inositol. Buckwheat has more antioxidants, which is beneficial for health, compared to wheat, barley, oats, and rye.

## Major Health Benefits

It is thought that buckwheat may prevent the genesis of diseases such as high cholesterol, hypertension, atherosclerosis, and diabetes. <sup>(1)</sup>

1. Antioxidants effect (heart related benefits)
2. A cholesterol-lowering functional food (heart related benefits)
3. Antihypertensive (heart related benefits)
4. Useful in the dietary treatment of diabetes (due to its low to medium glycemic index score).
5. Possibly beneficial in the fight against Alzheimer's disease. A study suggested that buckwheat prevented the deterioration of neurological functions in animal studies. <sup>(1, 2)</sup>

## Heart Health Overall

In combination, there are many benefits for the heart. The antioxidant Rutin, for example, acts to reduce heart disease by preventing blood clots, decreasing inflammation, and by reducing blood pressure. Magnesium, copper, fibre, and certain proteins are all believed to promote heart health.

Buckwheat's benefits for the heart are supported in a systemic research review and meta-analysis of buckwheat and cardiovascular diseases (CVD) risk markets. <sup>(3)</sup> To quote the conclusions of the paper:

*Using random-effects models, the weighted mean difference of post-intervention concentrations of blood glucose, total cholesterol and triglycerides were significantly decreased following buckwheat intervention compared with controls. For animal studies, nineteen of twenty-one studies showed a significant reduction in total cholesterol of between 12% and 54%, and fourteen of twenty studies showed a significant reduction in triglycerides of between 2% and 74%. There was inconsistency in HDL cholesterol outcomes in both human and animal studies. It remains unclear whether increased buckwheat intake significantly benefits other markers of CVD risk, such as weight, blood pressure, insulin, and LDL-cholesterol, and underlying mechanisms responsible for any effects are unclear.*

**Fig.3 Buckwheat Soba Noodles**



Source: Pixabay, Conceptasia, June 2022

## Additional points

- 1) **Buckwheat soba versus Rice** (white, long-grain). From a health perspective, buckwheat is superior especially with respect to minerals. <sup>(4)</sup> A detailed breakout is available from the web address in the references. The underlying data comes from the US department of Agriculture. A study <sup>(5)</sup> compared the glycemic index for soba (GI of 56) to white rice (GI of 100). A lower score is better.
- 2) In Japanese restaurants, **the water that the soba was cooked in** (*sobayu*) is given to the customer at the end of the meal, mixed with a dipping sauce (*tsuyu*) to be drunk. It contains the nutrients e.g., B vitamins that leached into the cooking water.
- 3) Especially if purchasing **packaged soba noodles**, please check the ingredients. There could be no buckwheat, but rather flavourings, salts, and other additives. Such products are likely to be unhealthy.
- 4) **The Book of Soba**, by James Udesky, 1988, is a fascinating in-depth look at the history and culture of soba, along with how to prepare and enjoy homemade buckwheat soba, and related recipes.

## References:

- 1) *Buckwheat: A Useful Food and it's Effects on Human Health*, by Haci Omer Yilmaz, Nurcan Yabancı Ayhan, and Cagdas Salih Medic, 2018
- 2) *Optimal treatment of Alzheimer's disease psychosis: challenges and solutions*, by Koppel J, Greenwald, 2014
- 3) *Buckwheat and CVD Risk Markers: A Systematic Review and Meta-Analysis*, by Liangkui Li, Georg Lietz and Chris Seal, 2018
- 4) *Buckwheat vs Rice - In-Depth Nutrition Comparison*, available at: <https://foodstruct.com/compare/buckwheat-vs-rice#:~:text=Rice%20has%20less%20Copper%2C%20Magnesium,Rice%20has%20only%200.013mg>.
- 5) *Nutritional properties of starch in buckwheat products: studies in vitro and in vivo*, by V Skrabanja, H G Liljeberg Elmståhl, I Kreft, and I M Björck, 2001, as referenced in <https://www.healthline.com/nutrition/soba-noodles#nutrition>