

## Phytochemical Content and Bioactive Properties of Wheat Sprouts

**Authors :** Jasna Čanadanović-Brunet, Lidija Jevrić, Gordana Četković, Vesna Tumbas Šaponjac, Jelena Vulić, Slađana Stajčić

**Abstract :** Wheat contains high amount of nutrients such as dietary fiber, resistant starch, vitamins, minerals and microconstituents, which are building blocks of body tissues, but also help in the prevention of diseases such as cardiovascular disease, cancer and diabetes. Sprouting enhances the nutritional value of whole wheat through biosynthesis of tocopherols, polyphenols and other valuable phytochemicals. Since the nutritional and sensory benefits of germination have been extensively documented, using of sprouted grains in food formulations is becoming a trend in healthy foods. The present work addressed the possibility of using freeze-dried sprouted wheat powder, obtained from spelt-wheat cv. 'Nirvana' (*Triticum spelta* L.) and winter wheat cv. 'Simonida' (*Triticum aestivum* L. ssp. *vulgare* var. *lutescens*), as a source of phytochemicals, to improve the functional status of the consumer. The phytochemicals' content (total polyphenols, flavonoids, chlorophylls and carotenoids) and biological activities (antioxidant activity on DPPH radicals and antiinflammatory activity) of sprouted wheat powders were assessed spectrophotometrically. The content of flavonoids (216.52 mg RE/100 g), carotenoids (22.84 mg  $\beta$ -carotene/100 g) and chlorophylls (131.23 mg/100 g), as well as antiinflammatory activity ( $EC_{50}=3.70$  mg/ml) was found to be higher in sprouted spelt-wheat powder, while total polyphenols (607.21 mg GAE/100 g) and antioxidant activity on DDPPH radicals ( $EC_{50}=0.27$  mmol TE/100 g) was found to be higher in sprouted winter wheat powders. Simulation of gastro-intestinal digestion of sprouted wheat powders clearly shows that intestinal digestion caused a higher release of polyphenols than gastric digestion for both samples, which indicates their higher bioavailability in the colon. The results of the current study have shown that wheat sprouts can provide a high content of phytochemicals and considerable bioactivities. Moreover, data reported show that they contain a unique pattern of bioactive molecules, which make these cereal sprouts attractive functional foods for a health-promoting diet.

**Keywords :** wheat, sprouts, phytochemicals, bioactivity

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020