

## Techno-Functional Characteristics, Mineral Composition and Antioxidant Potential of Dietary Fiber Extracted by Sonication from Different Oat Cultivars (*Avena sativa*)

**Authors :** Muhammad Suhail Ibrahim, Muhammad Nadeem, Muhammad Sultan, Uzair Sajjad, Khalid Hamid, Tahir Mahmood Qureshi, Sadaf Javaria

**Abstract :** Metabolic disorders, including hypertension, diabetes, cardiovascular disease etc., are major threats to public health and economy. Management and prevention of alarmingly increasing disorders have attracted researchers to explore natural barriers against these disorders. The objective of this study was to explore oats as a potential source of dietary fiber. Extraction of dietary was optimized by response surface methodology, and five indigenous oat cultivars, including SGD2011, Avon, SGD81, PD2LV65, and S2000, were also characterized for techno-functional characteristics, mineral composition and phytochemical quantification. These cultivars varied significantly ( $p < 0.05$ ) for oil holding capacity, water saturation, and water holding capacity, respectively. SGD81 showed the highest oil-holding capacity, water-holding capacity, and water saturation due to the highest fraction of dietary fiber. The highest values of total phenolic contents, total flavonoid contents, total flavonol contents, 2, 2-Diphenyl-1-picrylhydrazyl radical scavenging activity, and anthocyanin were shown by SGD81, and SGD2011, respectively. All cultivars varied significantly ( $P < 0.05$ ) with respect to phytochemical quantification. Oat cultivars SGD81 and SGD2011 showed the best phenolic acid profile and can be effectively used as a source of nutraceuticals. Beyond the nutritional properties of oats, these also contribute and emerged as potential sources of dietary fiber and have gained attention as nutraceutical cereal crops. This approach offers oats as a natural means of dietary fiber to protect humans from alarmingly increasing metabolic disorders, and its extraction by sonication has made it a sustainable and eco-friendly strategy.

**Keywords :** oat cultivars, dietary fibers, mineral profile, antioxidant activity, color properties

**Conference Title :** ICFTS 2024 : International Conference on Food Science and Technology

**Conference Location :** San Francisco, United States

**Conference Dates :** November 04-05, 2024