

Safe use of Wheat Flour by Knowing Gluten Content

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Abstract: *There is greater demand for fast food in the form of noodles, pasta, pizza, bread, etc. in younger generation. Wheat is a staple food of many Indians. Wheat flour is the main ingredient of fast food products. The main contents of wheat are proteins and carbohydrates. Gluten is the protein part of wheat flour which gives elasticity and strength to dough. Wheat with high gluten content is preferred by many food industries however gluten is responsible for digestive discomfort and also found to be allergic, under such circumstances it is necessary for us to select wheat with less percentage of gluten for consumption. Hence in present study wheat flour gluten was analysed and the quantification of gluten was done by calculating wet gluten, dry gluten. The gluten index is also studied by using biochemical test (Folin-Lowry method). In all six local varieties of wheat were analyzed for gluten content, and out of them many showed high gluten content. Present study gives an idea to select the variety of wheat to be used for consumption.*

Keywords: Gluten, Wheat flour, Folin-Lawry's Method, Celiac disease.

REFERENCES

- [1]. Van Der Borgh, H. Goesaert, W. Veraverbeke and J. Delcour, "Fractionation of wheat and wheat flour into starch and gluten: overview of the main processes and the factors involved", *Journal of Cereal Science*, vol. 41, no. 3, pp. 221-237, 2005. Available: 10.1016/j.jcs.2004.09.008.
- [2]. American Association for Clinical Chemistry - AACC. (1995). *Approved Methods*. St. Paul: AACC
- [3]. ASRO. 2008. *Metode de analiza a cerealelor si produselor de macinis*. SR ISO 712:2005, SR ISO 21415-1:2007, SR ISO 90:2007, Bucuresti.
- [4]. S. Bathula, "Extraction of gluten from food material", *MOJ Proteomics & Bioinformatics*, vol. 7, no. 3, 2018. Available: 10.15406/mojpb.2018.07.00234.
- [5]. L. dos Reis Gallo, C. Reis, M. Mendonça, V. da Silva, M. Pacheco and R. Botelho, "Impact of Gluten-Free Sorghum Bread Genotypes on Glycemic and Antioxidant Responses in Healthy Adults", *Foods*, vol. 10, no. 10, p. 2256, 2021. Available: 10.3390/foods10102256.
- [6]. Gluten: A Benefit or Harm to the Body? <https://www.hsph.harvard.edu/nutritionsource/gluten/>
- [7]. P. Weegels, J. Marseille and R. Hamer, "Enzymes as a Processing Aid in the Separation of Wheat Flour into Starch and Gluten", *Starch - Stärke*, vol. 44, no. 2, pp. 44-48, 1992. Available: 10.1002/star.19920440203.
- [8]. Kaushik, N. Kumar, M. Sihag and A. Ray, "Isolation, characterization of wheat gluten and its regeneration properties", *Journal of Food Science and Technology*, vol. 52, no. 9, pp. 5930-5937, 2014. Available: 10.1007/s13197-014-1690-2.
- [9]. P. Verberne and W. Zwitserloot, "A New Hydrocyclone Process for the Separation of Starch and Gluten from Wheat Flour", *Starch - Stärke*, vol. 30, no. 10, pp. 337-338, 1978. Available: 10.1002/star.19780301004.
- [10]. K. F., *Technology of Main Ingredients—Water and Flours*. Academic Press, 2017, pp. 15-121.
- [11]. R. Kaushik, N. Kumar, M. Sihag and A. Ray, "Isolation, characterization of wheat gluten and its regeneration properties", *Journal of Food Science and Technology*, vol. 52, no. 9, pp. 5930-5937, 2014. Available: 10.1007/s13197-014-1690-2.
- [12]. F. Koning, "Adverse Effects of Wheat Gluten", *Annals of Nutrition and Metabolism*, vol. 67, no. 2, pp. 7-14, 2015. Available: 10.1159/000440989.

- [13]. F. Laignier et al., "Amorphophalluskonjac: A Novel Alternative Flour on Gluten-Free Bread", *Foods*, vol. 10, no. 6, p. 1206, 2021. Available: 10.3390/foods10061206.
- [14]. M. Christoph, N. Larson, K. Hootman, J. Miller and D. Neumark-Sztainer, "Who Values Gluten-Free? Dietary Intake, Behaviors, and Sociodemographic Characteristics of Young Adults Who Value Gluten-Free Food", *Journal of the Academy of Nutrition and Dietetics*, vol. 118, no. 8, pp. 1389-1398, 2018. Available: 10.1016/j.jand.2018.04.007.
- [15]. K. Arslain, P. Baishya, C. Gustafson and D. Rose, "The Relationship of Perceived Health Benefits and Information Sources to Following a Gluten-Free Diet Among People Without Celiac Disease or Non-Celiac Gluten Sensitivity", *Current Developments in Nutrition*, vol. 4, no. 2, pp. 704-704, 2020. Available: 10.1093/cdn/nzaa051_001.
- [16]. N. Benjamin and C. Brooks., "Health Benefits and Adverse Effects of a Gluten-Free Diet in Non-Celiac Disease Patients – Gastroenterology & Hepatology", *Gastroenterologyandhepatology.net*, 2021. [Online]. Available: <https://www.gastroenterologyandhepatology.net/archives/february-2018/health-benefits-and-adverse-effects-of-a-gluten-free-diet-in-non-celiac-disease-patients/>. [Accessed: 03- Dec- 2021].
- [17]. P. Steeneken and H. Helms, "Laboratory-scale Dry/Wet-Milling Process for the Extraction of Starch and Gluten from Wheat", *Starch - Stärke*, vol. 61, no. 7, pp. 389-397, 2009. Available: 10.1002/star.200800065.
- [18]. A. Wani et al., "Physico-chemical, thermal and rheological properties of starches isolated from newly released rice cultivars grown in Indian temperate climates", *LWT - Food Science and Technology*, vol. 53, no. 1, pp. 176-183, 2013. Available: 10.1016/j.lwt.2013.02.020.
- [19]. K. Brijs, F. Delvaux, V. Gilis and J. Delcour, "Solubilisation and Degradation of Wheat Gluten Proteins by Barley Malt Proteolytic Enzymes", *Journal of the Institute of Brewing*, vol. 108, no. 3, pp. 348-354, 2002. Available: 10.1002/j.2050-0416.2002.tb00560.x.