EDIBLE PRODUCTS from PULSE MILLING BYPRODUCT
BATI, CHAPATI, IDLI, KHAKRA, PARATHA, PAPAD

Salient features

- Pulses are consumed after dehusking and splitting, in form of dal.
- The process involves abrasive dehusking in commercial mills which causes milling loss.
- The milling byproduct and its fractions were evaluated for food value, viz., protein, phenols, antioxidants, fiber, calorific value etc.
- Protein content in powder extracted from milling byproduct has higher protein content than dehusked split, i.e., dal.
- Milling byproduct and powder fraction of the milling byproduct was used to develop various traditional, ready-to-eat and cook value added products
- Pulses milling byproduct rich in proteins, fiber, phenols and antioxidant values can be utilized for edible purposes in combination with other ingredients, such as whole wheat flour or white flour etc.

Advantages

- ✓ The edible products utilizing pulses milling byproduct are rich in protein, fiber, antioxidant and phenolic compounds.
- ✓ Pulses milling byproduct can be used as an ingredient to commercial products such as biscuits, bakery products, pizza base, and ready to cook products such as instant dal or soup, noodles etc., to enhance nutrition to the foods often considered as junk food.
- ✓ These products can extend health benefits to children having fond for fast foods like pizza, burger, cake etc.

Process Technology / Product developed by	Dr. Prasoon Verma, Senior Scientist (Agricultural Structures & Process Engineering), Dr. Vaibhav Kumar, Dr. Krishnashish Das and Dr. Man Mohan Deo Division of Crop Production and Division of Basic Sciences, ICAR-Indian Institute of Pulses Research, Kanpur - 208 024 UP, India. Email: director.iipr@icar.gov.in; prasoon.verma@icar.gov.in
Year	2018-2022
Source of funding	MOFPI
More information	**Status of commercialization / Patent / Publications** Pulses milling protocols for obtaining edible quality milling byproduct was commercialized to M/s Mamta Agro India, Kanpur and M/s Neelam Tyagi Agri Industries, Ghaziabad and Protein and Fiber Rich Biscuits was commercialized to M/s Mahodhya Agri Works, Kanpur. Patents have not been filed. **Publications:** i) Verma P, Kumar V, Das K, Deepshikha, Parashar M. 2021 Biochemical studies of chickpea grain, *dal* and fractions of milling by-product. Journal of Food Legumes 34(3): 218-224. ii) Verma P, Kumar V, Das K, Deepshikha, Parashar M. (2022). Biochemical Compositions of Milling Byproduct of Mungbean and its Fractions. Asian Journal of Dairy and Food Research. DOI: 10.18805/ajdfr.DR-1840. **M. Tech. Thesis:** i) Chauhan Shivani. 2021. Utilization of Lentil Milling By-product for Bakery Products - Buns. Amity Institute of Biotechnology, Amity University Rajasthan, NH-11C, Kant Kalwar, Jaipur-303002. ii) Verma Shanya. 2021.Utilization of Lentil Milling Byproduct for Development of RTE Snacks – Nachos. Department of Food Process Engineering, Vaugh Institute of Agricultural Engineering & Technology, Sam Higginbottom University of Agriculture, Technology & Sciences, Prayagraj - 211 007. **Technology transfer** To M/s Mamta Agro India, Kanpur, M/s Mahodhya Agriworks, Kanpur and M/s M/s Neelam Tyagi Agri Industries, Ghaziabad.