

Potato peels waste derived Nutraceutical

Salient features

- Green economical Process developed for the extraction of polyphenolic antioxidants from Potato peels waste. Extracts depicted excellent antioxidant and antimicrobial properties.
- Process developed for making Nutraceutical using the polyphenolic antioxidants from Potato peel extract.
- The residue left after the extraction of polyphenolic antioxidants is a source of dietary fibers, which find application in bakery and Functional food.
- Shelf life of above nutraceutical between 18-24 months.
- Excellent in vitro performance.
- Natural substitute to the synthetic antioxidant like BHA, BHT, which are carcinogenic.

Advantages

- ✓ The Process developed for generating wealth in form of polyphenolic antioxidants from food processing industries waste (fruit peels) is economical, green and can be further used for making nutraceutical. The residue left after the extraction of polyphenolic antioxidants is a source of dietary fibers, which find application in bakery and Functional food.
- ✓ The net effect at the end of the process is zero waste, thus complying with the principle of Circular Bioeconomy.
- ✓ The pilot plant set up on the above process at Merino Industries Ltd., Hapur, U.P. is versatile and can be used for making nutraceutical from any fruit peel waste.
- ✓ Natural substitute to the synthetic antioxidant like BHA, BHT, which are carcinogenic.



Nutraceutical from Potato Peel waste

Process

Technology /

Product

developed by

Year

*Source of
funding*

*More
information*

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Status of commercialization / Patent / Publications

1. Patent:

- a. Indian Patent filed on “*Process for isolation and recovery of antioxidant substances*” granted **Patent No. 386817**
- b. Indian Patent filed on “*Biorefinery process, components thereof and products therefrom*” granted **Patent No. – 397096**
- c. Indian Patent filed on “**sustained release nutraceutical from fruit and vegetable waste**” Application Number-202321034017, on 15/5/2023. FER received.

Publications:

- Das, R. S., Mohakar, V. N., & **Kumar, A. (2023)**. Valorization of potato peel waste: Recovery of p-hydroxy benzoic acid (antioxidant) through molecularly imprinted solid-phase extraction. *Environmental Science and Pollution Research*, 30(8), 19860-19872.
- Das, R. S., **Kumar, A.**, Wankhade, A. V., & **Mandavgane, S. A. (2022)**. Antioxidant analysis of ultra-fast selectively recovered 4-hydroxy benzoic acid from fruits and vegetable peel waste using graphene oxide based molecularly imprinted composite. *Food Chemistry*, 376, 131926.
- Das, R. S., Wankhade, A. V, **Kumar, A., (2021)** Computationally designed ionic liquid based molecularly imprinted@ graphene oxide composite: Characterization and validation *Journal of Molecular Liquids*, Volume 341, 116925.
- Das, R. S., **Kumar, A**, Wankhade, A. V, Peshwe DR, (2022). “ZrO₂@ chitosan composite for simultaneous photodegradation of three emerging contaminants and antibacterial application,” *Carbohydrate Polymers*, 278, 118940.
- Book Chapter on “**Value addition of fruit and vegetable waste: a nutraceutical perspective**” by SS Gaharwar, VN Mohakar, A **Kumar** in the Book entitled *Fruit and Vegetable Waste Utilization and Sustainability*, Pages-253-268, Publisher: Academic Press