

## Selective recovery of 4- hydroxy benzoic acid (antioxidant) from potato peel waste using graphene oxide supported molecularly imprinted solid-phase extraction

### Salient features

- 2D Graphene oxide supported Molecularly Imprinted composite (GOMIP) was computationally designed and synthesized for the selective recovery of 4-hydroxy benzoic acid from potato peels waste using Molecularly Imprinted Solid Phase Extraction (MISPE).
- Recovered 4-hydroxy benzoic acid can be used as preservative cum antioxidant and flavoring agent in various food industries because of its excellent antioxidant, bactericidal & fungicidal activity.
- The prepared product GOMIP composite was used for selective recovery of 4-hydroxy benzoic acid from potato peel waste using green solvents during the process.

### Advantages

- ✓ About 3.315 g of high value 4-hydroxy benzoic acid can be recovered from ten Kg of potato peels extract using the customized GOMIP sorbent based Molecularly Imprinted Solid Phase extraction.
- ✓ The developed graphene oxide supported molecularly imprinted composite can be reused for 7-10 cycles with the loss of 15% efficiency.
- ✓ Developed MISPE method using GOMIP as sorbent can be prove effective in selective recovery of 4-hydroxy benzoic acid with minimum volume of green solvent from the waste peels of potato in turn adding value to the waste peels.
- ✓ The recovered 4-hydroxy benzoic acid from potato peel using developed MISPE method exhibited antioxidant activity and can be used in cosmetic and food industries.



*Process*

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*Technology /*

Email: anpamakumar@chm.vnit.ac.in ,

*Product*

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*Source of  
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*More*

*information*

### **Status of commercialization / Patent / Publications**

#### **1. Patent:**

a. Indian Patent filed on “*Process for isolation and recovery of antioxidant substances*” granted **Patent No. 386817**

#### **2. Publication:**

- 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.