

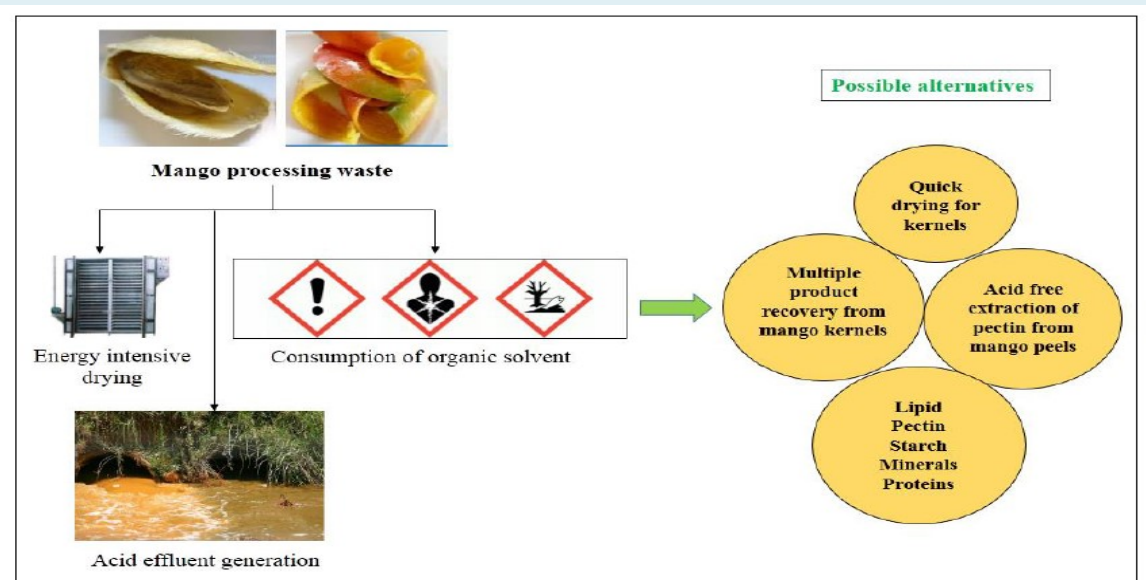
Green Extraction of Lipid, Starch and Pectin from Mango Processing Wastes

Salient features

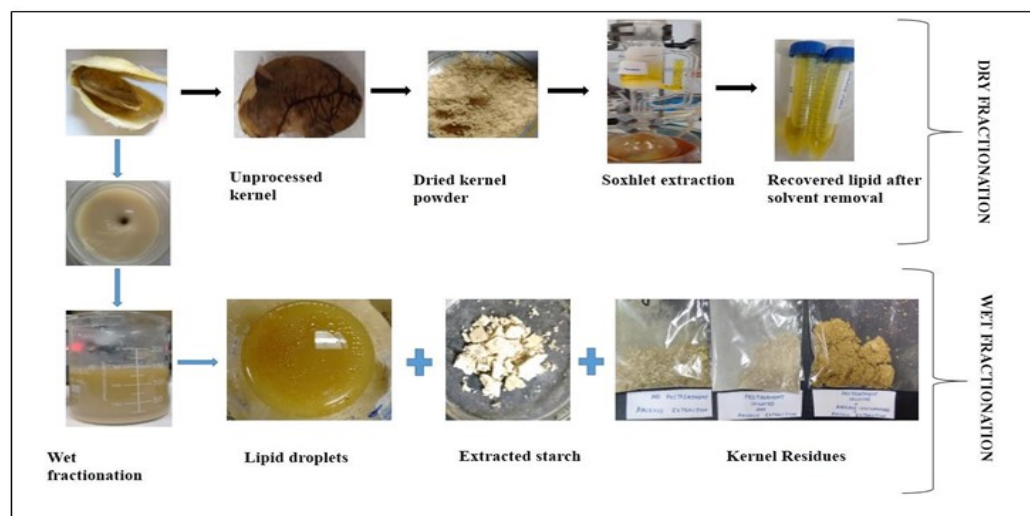
- Mango kernels are rich in lipids, starch and protein.
- Wet fractionation approach for the separation of lipids, starch and protein from mango kernel.
- Dry fractionation technique for lipid extraction from mango kernels.
- Mango peels are rich in pectin, polyphenols and sugars.
- Hydrocolloid based bio-refinery approach for the extraction of pectin.
- Use of lemon juice as organic acid in hydrothermal treatment and sonication method for the extraction of pectin from mango peel

Advantages

- ✓ High recovery of pectin
- ✓ Eco-friendly technology for the extraction of pectin.
- ✓ Useful method for the extraction of low DE pectin in presence of a food grade acid.
- ✓ Use of extracted products for the incorporation in food products as nutraceuticals.
- ✓ Valorization of mango processing waste



Green processing of mango processing waste



Dry and wet fractionation for mango kernels

*Process
technology /
product
developed by
Year
Source of
funding
More
information*

Dr. Amit Arora, Centre for Technology Alternatives for Rural Areas (CTARA)
Indian Institute of Technology (IIT), Bombay, Mumbai, Maharashtra
aarora@iitb.ac.in

Girish Kumar, Electrical Engineering Department, IIT Bombay, Powai, Mumbai

2013-14

MoFPI

Status of commercialization / Patent / Publications

Publications

Arora, A., Banerjee, J., Vijayaraghavan, R., MacFarlane, D. and Patti, A. F. 2018. Process design and techno-economic analysis of an integrated mango processing waste biorefinery. *Industrial Crops and Products*, 116: 24-34.

Banerjee, J., Singh, R., Vijayaraghavan, R., MacFarlane, D., Patti, A. F. and Arora, A. 2018. A hydrocolloid based biorefinery approach to the valorisation of mango peel waste. *Food Hydrocolloids*, 77: 142-151.

Banerjee, J., Singh, R., Vijayaraghavan, R., MacFarlane, D., Patti, A. F. and Arora, A. 2017. Bioactives from fruit processing wastes: Green approaches to valuable chemicals. *Food Chemistry*, 225: 10-22.

Banerjee, J., Vijayaraghavan, R., Arora, A., MacFarlane, D. R. and Patti, A. F. 2016. Lemon

juice based extraction of pectin from mango peels: waste to wealth by sustainable approaches. *ACS Sustainable Chemistry & Engineering*, 4(11): 5915-5920.

Banerjee, J., Patti, A. F., MacFarlane, D., Vijayaraghavan, R., Singh, R. and Arora, A. A. 2016. Effect of drying methods and extraction time-temperature regime on mango kernel lipids. *International Journal of Food and Nutrition Science*, 3: 1-10.

Patent

An integrated process for recovery of pectin and a Sugar-polyphenol mixture from horticultural waste. Indian patent (TEMP/E-1/32368/2017-MUM)