Advancements in oil extraction technologies: a review of various approaches for Mahua oil extraction

Abir Chakravorty[1,*] and Somnath Roy[2]

[1]Agricultural and Food Engineering Department, Indian Institute of Technology, Kharagpur 721 302, India
[2]Institute of Agricultural Science, University of Calcutta, Kolkata 700 073, India

The present study surveys the current techniques of oil extraction, specifically mechanical pressing, and ultrasound-assisted extraction methods. Based on research studies, we review each approach in terms of advantages and disadvantages, which are especially highlighted in relation to their impact on yield, quality, affordability, and scalability. In addition, a new approach to Mahua oil extraction is introduced here, which would improve process efficiency and output while paying attention to environmental and economic factors. The current review again emphasizes the need to use the latest technologies, mechanical pressing, and ultrasound-assisted extraction to meet the emerging requirements of health-conscious and environment-friendly practices in essential oil production.

Keywords: Mahua oil, mechanical pressing, oil extraction technologies, sustainable extraction, ultrasound-assisted extraction.

subcontinent[3,4]. It is a significant non-timber forest product (NTFP) that is found in large quantities in regions like Gujarat, Andhra Pradesh, Rajasthan, Tamil Nadu, Jharkhand, Chhattisgarh, Madhya Pradesh, Odisha and Bihar.

Mahua flowers are renowned for having a high sugar content (66–72% of dry weight)[5]. The flower is utilized for culinary and medicinal purposes, the seed is used to extract oil, and the fibre is used to make soap, detergent, fish food and fertilizer. Three to four seeds are found within the green, meaty Mahua fruits, which have significant commercial potential as a source of vegetable fat. The Mahua tree, sometimes called 'the Indian butternut tree', is prized for the fat/oil content of its seeds. In July and August, during the rainy season, the seeds are gathered[5–7]. Depending on the size, variety and age of the tree, the average output varies from 5 to 200 kg/tree.

Researchers found that the seeds of Mahua represent a novel commercial edible fat source. They have fat that