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## Improved extraction of avocado oil by application of sono-physical processes

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### Abstract

Ultrasound treatment is known to increase the oil extractability in olive and palm oil processes. This work examined the effect of ultrasound conditioning of avocado puree on oil extractability and quality, at low (18 + 40 kHz) and high (2 MHz) frequencies, at litre-scale. Other ultrasound parameters evaluated included high frequency effect (0.4, 0.6, and 2 MHz; 5 min; 90 kJ/kg) and sonication time (2.5-10 min at 2 MHz), without malaxation. Finally, a megasonic post-malaxation intervention was assessed at selected malaxation times (15, 30, and 60 min). Both low and high frequency ultrasound treatments of the non-malaxed avocado puree improved extractability by 15-24% additional oil recovery, with the highest extractability achieved after 2 MHz treatments, depending on the fruit maturity and oil content. There was no preferential improvement on oil extractability observed across high frequencies, even though extractability increased with sonication time. Ultrasound treatment also showed a positive effect after puree malaxation. Oils obtained from sonicated purees showed peroxide and free fatty acid values below the industrial specification levels and an increase in total phenolic compounds after 2 MHz treatment. High frequency ultrasound conditioning of avocado puree can enhance oil separation and potentially decrease the malaxation time in industrial processes without impacting on oil quality.

### Keywords

Ultrasound, high frequency, separation, avocado oil, extraction, viscosity

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