

**Title** Effect of air-jet impingement parameters on the extraction of pomegranate arils  
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### **Abstract**

An impingement method was employed for extracting of pomegranate arils. The method is based on opening the fruit, separating it into two halves, and extracting the arils with the help of pressurised air-jets. The results showed that air pressure, nozzle diameter, the number of passes, and the route of the nozzle all had significant effects ( $P=0.01$ ) on the percentage of extracted arils. Air pressure had the highest effect on aril extraction, while the nozzle diameter had the least. The best results of extraction of pomegranate arils were obtained when the nozzle travelled in a figure of eight route. Air pressure and nozzle diameter also significantly influenced the percentage of damaged pomegranate arils. Extracting the fruit arils at an air pressure of 800 kPa caused a considerable portion of extracted arils to be mechanically damaged. At an air pressure of 500 and 700 kPa the percentages of damaged arils were not appreciable. At 500 kPa air pressure, a nozzle diameter of 3.5 mm, and 4 passes of the nozzle the percentage of extracted arils was equal to 86%. The rupture force and energy of the aril flesh ranged between 7.32–8.35 N and 3.73–4.62 N mm, respectively. The mean values of measured impingement loads for air pressures of 300, 500, 700, and 800 kPa were found to be 2.49, 3.63, 5.00, and 8.32 N, respectively. Impingement force increased with nozzle diameter.