

**Title** Photo ionisation detector as a tool for apple quality determination  
**Authors** R. Vidrih, J. Hribar, E. Zlatić  
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### **Abstract**

The objective of our research was to evaluate the capacity of photoionization detectors (PID) to assess apple aroma intensity in relation to sensory analysis. Two apple cultivars 'Granny Smith' and 'Golden Delicious' at different maturity stages were selected. Fruit aroma was analysed using a portable photoionization detector and static headspace gas chromatography coupled with mass spectrometry (GC/MS) techniques. With the aid of sensory analysis two different groups of apples based on aroma intensity were differentiated (low and high intensity aroma). In addition, sensory perception thresholds of apple aroma were determined. Results show that the PID instrument responses are comparable with sensory aroma intensity perception and show varying degrees of sensitivity for different apple cultivars. The correlation between PID readings and GC-MS aroma concentration was very high ( $r^2 = 0.98$ ). A correlation between PID readings and sensory response was also very good ( $r^2 = 0.75$ ). The application of the PID based method is simple, fast and very sensitive to what is important in low intensity aroma varieties like 'Granny Smith'. However reference values for each apple cultivar need to be made when using the PID as a tool for quality determinations.