

## PHYTOCHEMICAL COMPOSITION AND ANTIOXIDANT PROPERTIES OF UNRIPE APPLES

Diana Crucirescu 

*Public Institution of the Scientific and Practical Institute of Horticulture and Food Technologies,  
Laboratory of Food and Alcoholic Products Safety, 59, Vierul str., Codru, Chisinau MD 2011, Republic of Moldova  
e-mail: dcrucirescu@mail.ru*

**Abstract.** The aim of this study was to determine the physicochemical indicators and antioxidant activity from the unripe apples obtained after the agricultural thinning operation. Apples of the *Coredana*, *Golden Rezistent*, *Reglindis* and *Rewena* varieties harvested in 2020 were studied. Physicochemical indicators were analysed. The quantitative and qualitative determination of organic acids was carried out by the HPLC method, and of carbohydrates by capillary electrophoresis. Determination of antioxidant activity and total polyphenols content was evaluated by spectrophotometric methods. The highest amount of organic acids was obtained in the 45<sup>th</sup> days after full bloom (DAFB) of harvest, the predominant being malic acid with a value between 15.09±0.02 and 21.64±0.01 g/100g dry weight (DW). Sugars had the highest value in 97<sup>th</sup> DAFB, fructose being the main one (67.79±0.11 – 75.73±0.10 g/L). Total phenolic content and antioxidant activity showed maximum values at the beginning of fruit harvesting, having 916.67±0.17 – 1316.13±0.21 mg GAE/100g DW and ascorbic acid equivalent antioxidant capacity of 16.94±0.12 – 23.51±0.2 mg AAE/100g DW, respectively. It was concluded that thinned unripe apples represent a natural source of organic acids and carbohydrates, significant amounts of phenolic compounds with antioxidant properties. The study provides information on unripe apples that can be processed and optimally used for food purposes.

**Keywords:** unripe apple, organic acid, carbohydrate, total polyphenolic content, antioxidant activity.

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