

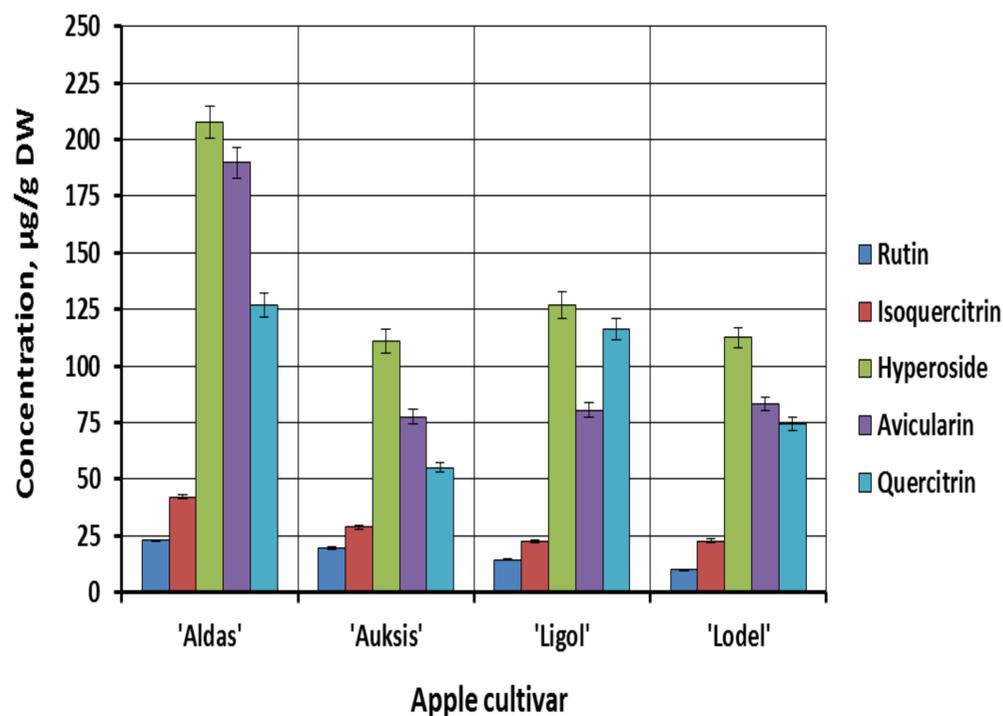


# Determination of chlorogenic acid and flavonoids of selected apple cultivars grown in Lithuania

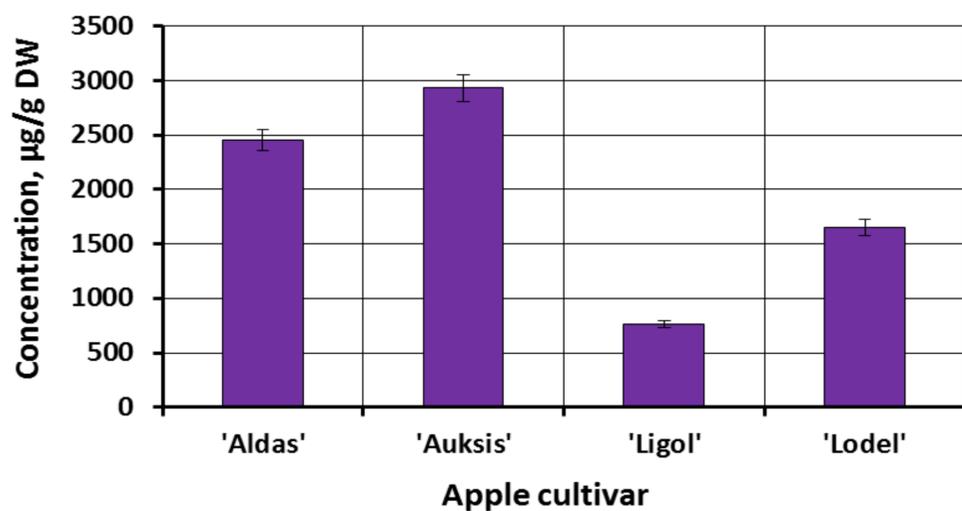
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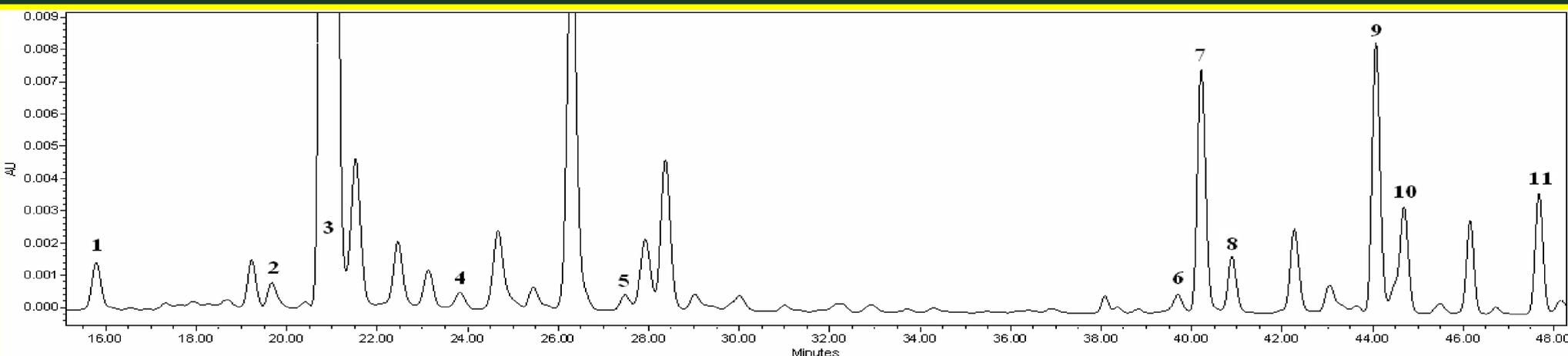


The aim of this research was to determine the qualitative and quantitative content of phenolic compounds in the ethanol extracts of apple fruits harvested from the cultivars 'Aldas', 'Auksis', 'Ligol', and 'Lodel' grown under Lithuanian climatic conditions. Extraction and HPLC analysis of phenolic compounds are described by Liaudanskas et al. 2014 [1]. In the text and diagrams values are presented as mean of triplicate analysis ± standard deviation µg/g of dry weight (DW).

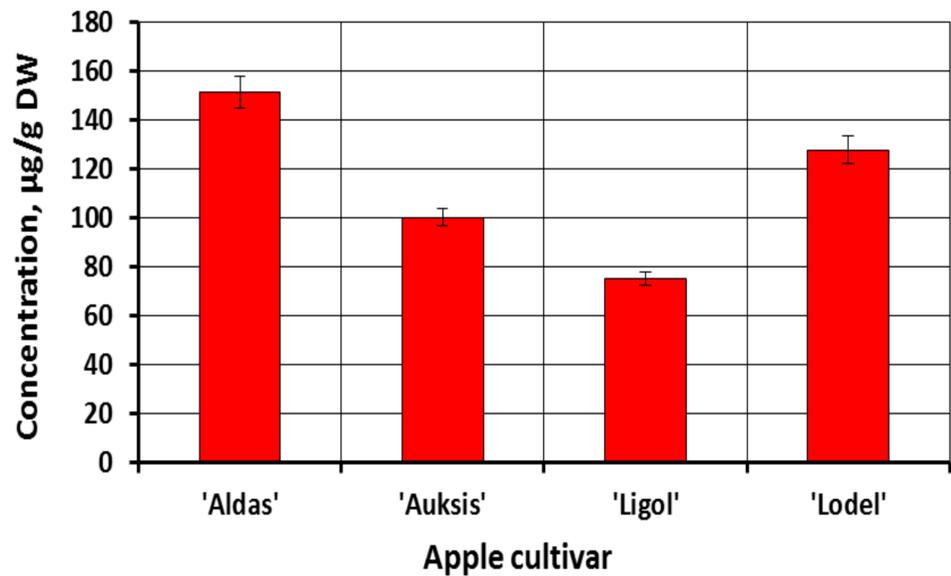


**Figure 1. Concentrations of quercetin glycosides in the ethanol extracts of apple fruit samples.** The highest concentrations of quercetin glycosides were determined in the apple fruits of the cultivar 'Aldas'. Hyperoside was a predominant component among quercetin glycosides in the ethanol extracts of the apple samples of cultivars selected for this study.

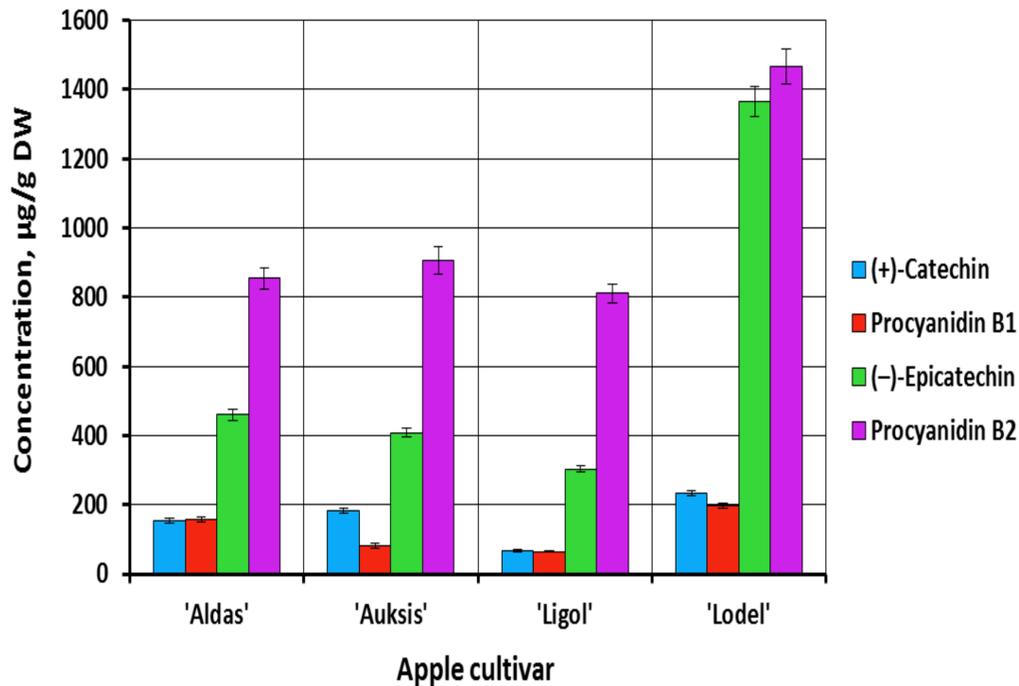
**Figure 2. Concentration of chlorogenic acid in the ethanol extracts of apple fruit samples.** The apple fruits of the cultivar 'Auksis' contained the greatest concentration of chlorogenic acid (2934.1±122.4 µg/g), and the lowest concentration of this compound was determined in the apple fruits of the cultivar 'Ligol' (762.4±29.1 µg/g).



**Figure 3. Chromatogram of the ethanol extract of 'Aldas' cultivar fruit sample investigated (λ=320 nm).** Numbers indicate the peaks of analytes: 1, procyanidin B1; 2, (+)-catechin; 3, chlorogenic acid; 4, procyanidin B2; 5, (-)-epicatechin; 6, rutin; 7, hyperoside; 8, isoquercitrin; 9, avicularin; 10, quercitrin; 11, phloridzin.



**Figure 4. Concentration of phloridzin in the ethanol extracts of apple fruit samples.** The apple fruits of the cultivar 'Aldas' contained the greatest concentration of phloridzin (151.7±6.5 µg/g), and the lowest concentration of this compound was determined in the apple fruits of the cultivar 'Ligol' (75.4±2.7 µg/g).



**Figure 5. Concentrations of flavan-3-ols in the ethanol extracts of apple fruit samples.** The highest concentrations of flavan-3-ols were determined in the apple fruits of the cultivar 'Lodel'. Procyanidin B2 was a predominant component among flavan-3-ols in the ethanol extracts of the apple samples of cultivars selected for this study.

**Conclusion.** The results of this study provide new knowledge about the qualitative and quantitative content of phenolic compounds in the apple fruits of cultivars grown under Lithuanian climatic conditions and variation in this content depending on the cultivar. The results of studies will be used to identify promising apple cultivars grown under Lithuanian climatic conditions, the fruits of which accumulate large amounts of phenolic compounds and are valuable for the consumption and production of juice and other foods.

**Acknowledgements.** This study was supported by the Foundation of Lithuanian University of Health Sciences and a grant from the Research Council of Lithuania (No. SVE-02/2011).

**Reference.** 1. M. Liaudanskas, P. Viškelis, V. Jakštas, et al., "Application of an Optimized HPLC Method for the Detection of Various Phenolic Compounds in Apples from Lithuanian Cultivars," *Journal of Chemistry*, vol. 2014, Article ID 542121, 10 pages, 2014. doi:10.1155/2014/542121