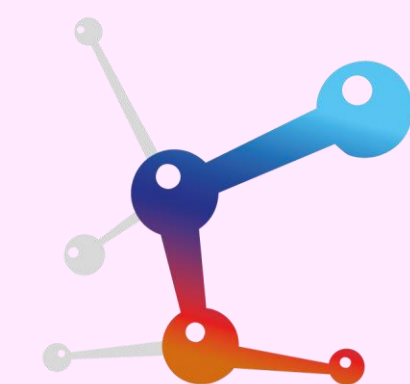


# Rapid Method for Differentiation of Extracts of Wood Used in Balkan Cooperage



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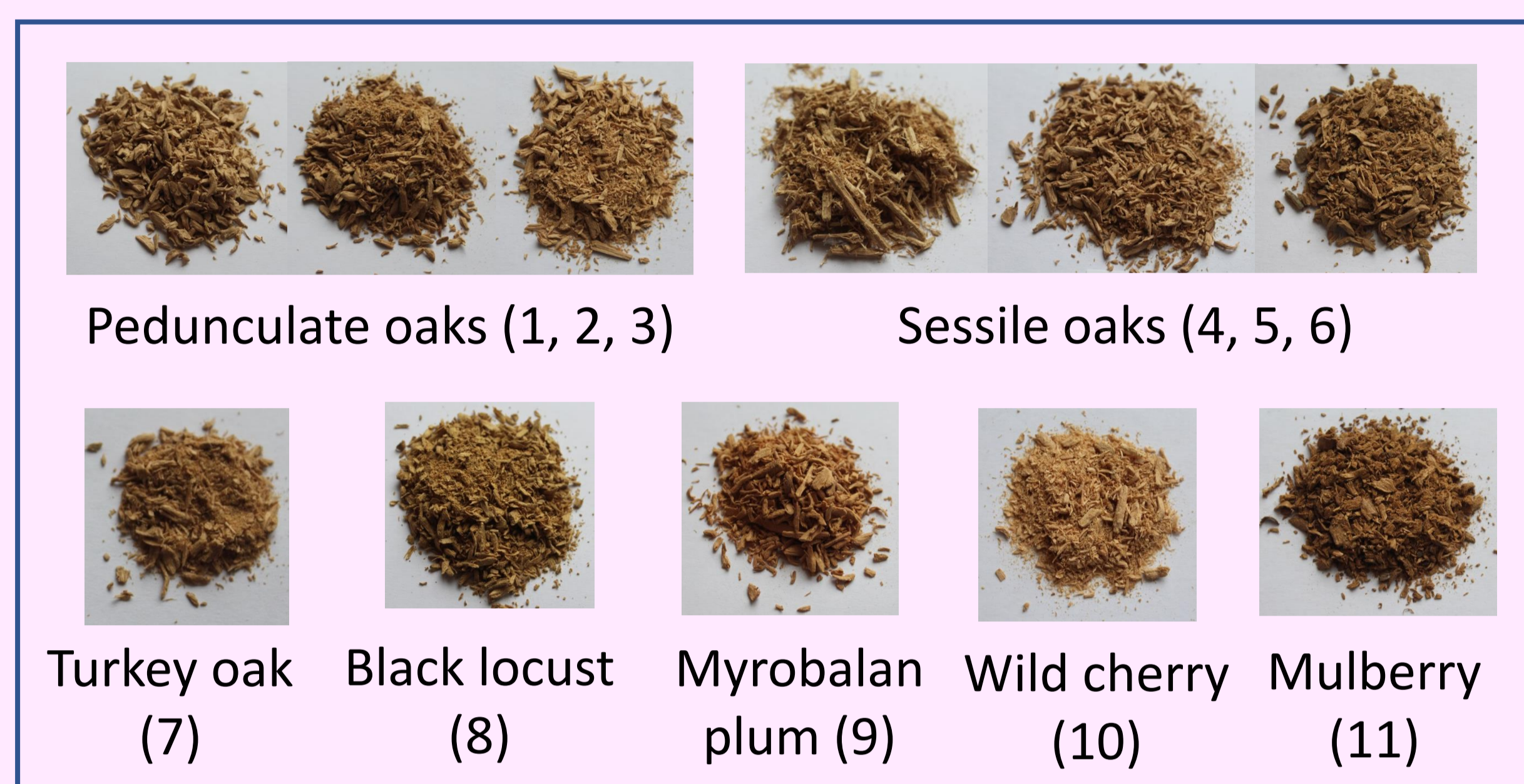
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**The aim.** Characterization of the extracts of different wood species commonly used in Balkan cooperage by two electrochemical methods (cyclic voltammetry (CV) and differential pulse voltammetry (DP)) in order to investigate possible application of these methods towards estimation of differences among wood species.

**Samples.** Sawdust of different wood species commonly used in Balkan cooperage. All samples except sessile oak (5) and Turkey oak (7) were seasoned in the open air during 12 months. Sessile oak (5) and Turkey oak (7) were samples without natural seasoning treatment.



**Extraction.** Wood extracts were obtained by extraction of wood sawdust with ethanol (60%, v/v), reproducing the conditions of ageing process



**Methods.** Two different methods were applied in order to characterize wood extracts and investigate differences among wood species. For this purpose standard three electrode cell was used. Cell, of total volume of 3 mL, was equipped with standard three electrode system composed of: glassy carbon working electrode, silver/silver chloride (3MKCl) and platinum wire as reference and counter electrode, respectively. These are simple, rapid and inexpensive methods that could be used for measurement of antioxidant capacity.

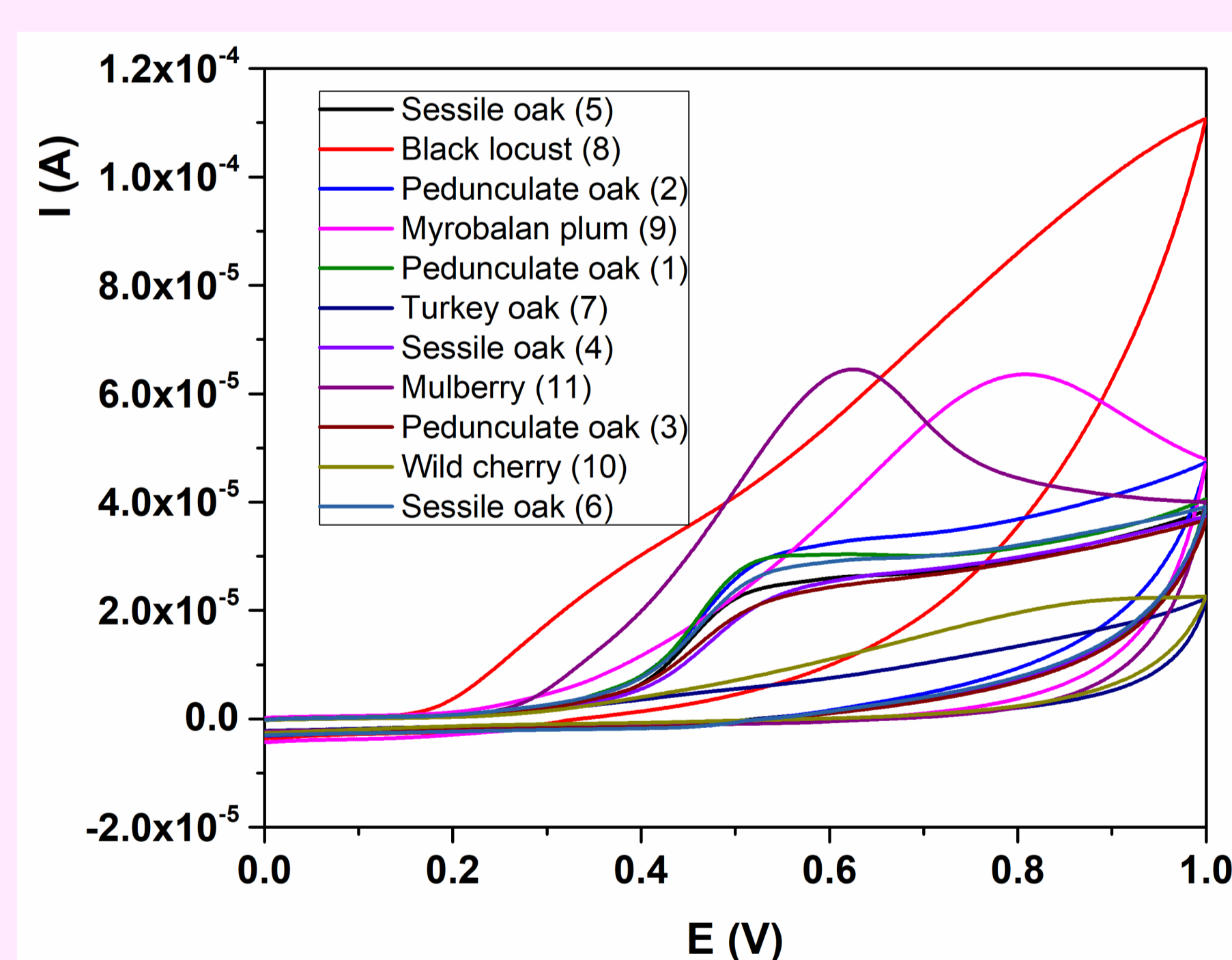


Figure 1. CV voltammograms of the samples

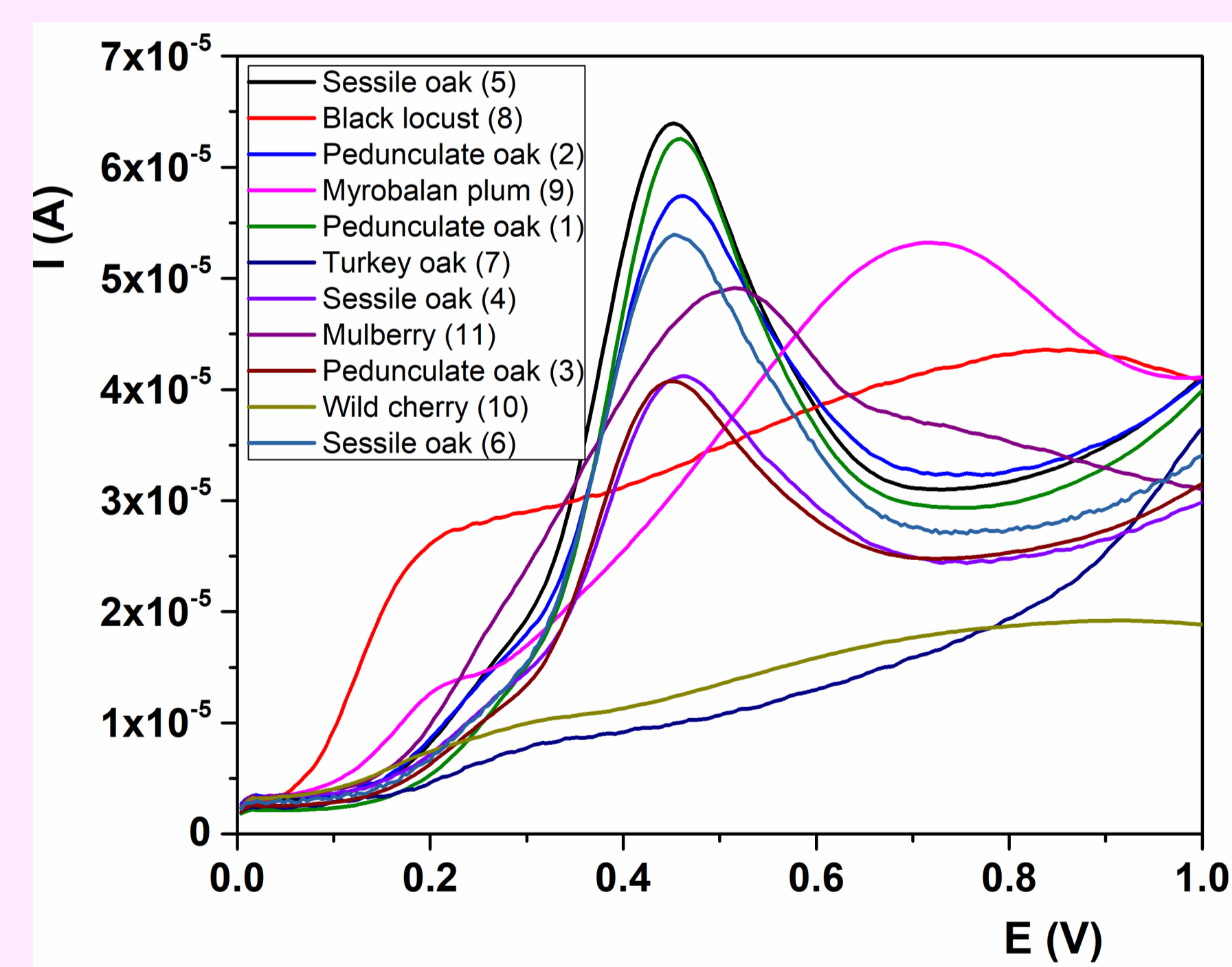


Figure 2. DP voltammograms of the samples

**Results.** The results showed that cyclic voltammetry can distinguish investigated wood species, which points to the phenolic profile unique for the wood specie. The same class of wood extract shows similar behavior (based on signal shape and the peaks position) indicating the presence of the same phenolic compounds. Additional experiments using DP voltammetry confirms these observations. However, it is obvious that DP voltammetry experiments are more appropriate for the quantification of the samples and their antioxidant capacity due to increased sensitivity.

**Conclusion.** To our knowledge, electrochemical methods have not been implemented in characterization of wood extracts before. Present study allows application of the rapid, reagentless and sensitive method for the monitoring of the phenolic profiles of the wood, and determination of botanical origin. Additionally, proposed approach, offers fast and reliable determination of the quality of the used wood barrel, as an important and beneficial fact for the producers of alcoholic beverages.