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SEPARATION OF BLACK ALDER BARK EXTRACTS USING SOLID PHASE EXTRACTION TO OBTAIN FRACTIONS WITH IMPROVED PROPERTIES

Black alder bark (Alnus glutinosa) refers to the lignocellulosic biomass which together with the main cell wall components contains a wide range of polyphenolic extractives including diarylheptanoids which are recognized as a natural antioxidants [1]. Therefore, black alder bark extract is a resource with wide range of possible practical application including antioxidative additives in cosmetics, or/and as a technical antioxidant in polymeric chemistry. In this way microwave assisted water extraction of black alder bark revealed itself as a fast and energy effective methods of extractives isolation. To increase the antioxidative properties of isolated products via increasing of polyphenolic concentration in them the Solid Phase Extraction (SPE) was utilised with two different sorbents of different polarity (Amberlite XAD2 and Amberlite XAD7).

Figure 1. Process workflow for extract fractionation using solid phase extraction

This approach allowed successfully fractionate black alder bark extract with total mass recovery being 95%. Obtained water fractions were enriched with carbohydrates, while obtained ethanol (EtOH) fractions were enriched with phenolic type compounds and showed higher antioxidative activity comparable to that of non-fractionated extracts.

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References:

1. Lauberts, M.; Pals, M. Antioxidant Activity of Different Extracts from Black Alder (Alnus glutinosa) Bark with Greener Extraction Alternative. Plants 2021, 10, 2531, doi:10.3390/plants10112531.

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