Treatment of biomass wastes with MW and US for additional recovery of active compounds

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The vegetal biomass studied in this paper is composed of vegetal wastes resulting from the industrial extraction by boiling in aqueous medium, of medicinal plants. After extraction, the biomass is processed by drying, grinding, screening and sieving with coupled sieves, resulting the working fractions: 315<d<500 μm and d<315 μm. These fractions were subjected to severe microwave (315<d<500 μm fraction) and ultrasonic (d<315 μm fraction) treatments in the presence of water as a solvent. The filtered extracts were analyzed for the determination of the additional active compounds remanent after the industrial extraction. Soluble lignin was also dosed by spectrophotometric methods. At the same time, basic hydrolysis with 0.5N NaOH solution of waste biomass was performed by microwave and ultrasonic treatment, followed by washing of the substrate with distilled water to neutral pH for enzymatic hydrolysis. Thus, determination of reducing sugars by spectrophotometric methods was aimed. For comparison, all the above treatments and analyses were also performed on the fresh (non-extracted) medicinal plant, dried, grinded and sieved to working fractions.

In this article we present the results obtained for the willow bark (*Salix Alba*) and liquorice root (*Glycyrrhiza Glabra*) vegetal material. For these samples, the content of additional active compounds was determined, namely: salicylic derivatives (expressed in salicin) for the willow bark and glycyrrhizic acid for the liquorice root. The results obtained for soluble lignin and reducing sugars for the two vegetal wastes studied are also presented.

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