DEVELOPMENT OF SUPORTED IONIC LIQUIDS FOR THE PURIFICATION OF ANTILEUKEMIC DRUGS

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L-asparaginase (LA) is an antileukemic biopharmaceutical of current high-cost. LA is produced via fermentation and its purification usually comprises precipitation, liquid-liquid extraction and chromatography techniques [1].

This work aims to develop sustainable technologies to purify LA. Functionalized nanomaterials, namely supported ionic liquids (SILs), are used as cost-effective purification techniques for the target enzyme. Initially, the synthesis and modification of SILs was performed. Different SILs were obtained and used for the purification of LA. Commercial LA was used for the first purification tests, in order to understand the behavior of the enzyme in contact with the nanomaterial. Experimental conditions, such as pH, and material/LA ratio, contact time were optimized. LA activity was quantified by Nessler reaction [2]. The first results reveal a total adsorption of LA by the SILs with a recovered activity reaching 90% depending on the SILs functionalization/ treatment.

The modified SILs are shown to be very promising nanomaterials for the purification of LA. The LA was easily attached to SILs by adsorption under mild conditions. SILs supports can be a real alternative for a single step immobilization/purification of LA.

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