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Polyphenol, polysaccharide and lactate extraction from pulping factory black liquor by ionic liquids.

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Abstract

Extraction of polyphenols, polysaccharides and organic acids present in a liquor issued from a pulping factory, so-called black liquor, was studied using two ionic liquids trihexyltetradecylphosphonium chloride ([P₆₆₆₁₄]Cl) and trihexyltetradecylphosphonium bromide ([P₆₆₆₁₄]Br). The extraction of each of the three compounds mentioned above was reported as a function of the dilution of the initial black liquor, the volume ratio of liquor vs. ionic liquid, and the initial pH of the black liquor. Polyphenols and polysaccharides were quantitatively extracted at room temperature with both ionic liquids. Extraction of lactate anions was found to be low, exhibiting distribution coefficients below 8 in all cases.

Keywords

black liquor; [P₆₆₆₁₄]Cl; polyphenol; lactate; polysaccharides; extraction; distribution coefficient

Highlights

Soda pulping factory black liquor contained higher concentrations of polyphenols.

Phosphonium based ionic liquids extracted polyphenols from black liquor.

[P₆₆₆₁₄]Cl and [P₆₆₆₁₄]Br were both studied for extraction characterization.

Lactate and polysaccharides were also co-extracted but with a lower efficiency.

[P₆₆₆₁₄]Cl showed better polyphenol extraction capacities than [P₆₆₆₁₄]Br.

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