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Virus removal from water by adsorption on cationic lignin nanoparticles

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PURPOSE OF THE ABSTRACT

Chemical and biological contaminations of water sources are growing human health issues. In many countries water is contaminated with viruses that induce sickness and can cause death. Current solutions for inactivation of viruses are partially efficient and bring more chemical pollutants into the water. [1] Furthermore, due to the nanosize of the viruses, there is a need to create new adsorbents to remove viruses from water. [2] Lignin, a polymer from wood biomass, is a biodegradable and sustainable alternative for virus removal. Furthermore, by transformation into colloidal lignin particles (CLPs), this biopolymer become easy to handle when dispersed into water. [3] Our attention was focused on the understanding of the mechanism of interaction between lignin nanoparticles and viruses by using anionic and cationic lignin nanoparticles [4]. In this study, we demonstrate the efficiency of the CLPs to adsorb viruses and the ability to separate the formed lignin-virus complexes from the water in order to get purified water.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

Lignin | Nanoparticles | Virus | Adsorption

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