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# Solubility study of Kraft lignin for the development of electrospun nanofibers

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## Resumo:

Lignin is a high-volume byproduct of paper manufacturing which has been explored in many research fields, especially for the development of fiber and nanofiber for biomedical applications [1,2]. This work presents a solubility study performed through gravimetry for kraft lignin considering its application for the development of electrospun nanofibers [3]. In practical terms, lignin was solubilized in alkaline aqueous solution, dimethylformamide and dimethylsulfoxide, at concentrations of 10, 15 and 20% (w/v) and varying temperatures of 25, 50 and 75 °C, under constant stirring. After solubilizing, the solution was filtered, and the insoluble fraction was dried in the oven at 100 °C. At 25 °C lignin was insoluble in all solvents tested, as predicted using Hansen solubility parameters. Although the increase in temperature promoted lignin solubilization in all solvents tested, at the highest temperature assayed, the solubilization was facilitated, presenting the smallest levels of the insoluble fraction. Lignin was soluble in all solvents tested, and optimum solubility conditions were achieved using 10% lignin solutions (w/v), without significant insoluble fraction, and therefore ideal concentration for the development of lignin based fibers.