Polyphenol-based and polyphenol-containing electrospun fibrous mats

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ABSTRACT

Notable progress has been made recently regarding the exploitation of lignin in the production of carbon fibres. Electrospinning is one of the methods for producing the lignin-based fibres throughout the literature. Based on initial studies as well as general analogies, some seminal works have been published regarding the nature of the lignins that are more suitable than others for electrospinning applications. More recently, our group, as well as others, have realised lignin-based fibres using tailored lignin preparations.

Based on structural insights, and hypothesising some fundamental mechanistic aspects in fibre formation based on analogies to other lignin valorisations that are based on supramolecular assembly phenomena, we pushed formation of electrospun fibrous matrices now to start from smallest lignin oligomers, as well as to start from even monomeric or dimeric tannins.

After exploiting fundamental aspects of fibre generation, we will also present additional novel polyphenol-containing fibrous mats based on various blended tannin-preparations suitable for value-added applications in the pharmaceutical sector.