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Abstract Formulary

Presentation type: **Oral** ✔ **Poster** ☐

Title: Starch aerogels and xerogels: exceptional absorption of theophylline and its release kinetics

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ABSTRACT (Space limited to 2200 characters)

Aerogels based on polysaccharides (bio-aerogels) are versatile materials that have potential to be used in life science applications such as pharmaceutics, cosmetics, food and bio-medical. For example, bio-aerogels can be used as a matrix for controlled delivery of drugs.

In our work we used starch to make aerogels via drying with supercritical CO_2 and “xerogels” via low-vacuum drying. Each was used as a carried of a model drug, theophylline. The goal of the work was double: first, to study the influence of the preparation conditions on material properties (aerogel vs xerogel), and second, to investigate the kinetics of theophylline release. Two new phenomena were obtained. 1) Depending on starch source, the properties of xerogels were similar to those of aerogels, showing the possibility of avoiding high-pressure technology for making low-density porous materials with specific surface area above 100 m^2/g. 2) Starch precursors before drying were absorbing theophylline during the impregnation, thus strongly increasing loading efficiency (several times above 100%). The release kinetics from aerogels and xerogels was recorded and analysed as a function of matrix properties.

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