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A method for determining polysaccharide content in biological samples

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Abstract: Difficulties in the determination of polysaccharide content in biological samples has been one of the bottlenecks limiting the development of polysaccharides pharmacokinetics, greatly due to the complicated chemical structure of these compounds. In this study, we established a simple, reproducible and reliable method for the determination of polysaccharide content in biological samples. Polysaccharides were replaced by fluorescein isothiocyanate (FITC) and iodine to generate a complex. The iodine content in the complex was measured by inductively coupled plasma-mass spectrometry (ICP-MS) to indirectly reflect polysaccharide content. We investigated the stability of the complex, carried on methodological validation and proceeded to determine the polysaccharide content in rat blood and organs after oral administration of iodine substituted polysaccharides using ICP-MS. The results showed that the iodine complex was stable in vivo and in vitro. In the bioavailability of polysaccharides, after 1h, the absorption rate of polysaccharides in blood was the highest, reaching 5.84%. After 3h, the bioaccessibility was differently distributed in various organs, reaching 1% on average across organs.

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