

Abstract

Covalently Cross-linked Particles based on Arabinoxylans: Antioxidant Activity and Cytotoxicity on a Human Colon Cell Line [†]

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Abstract: Polysaccharide-based carriers have become attractive materials for the delivery of therapeutics targeted to colon. Ferulated arabinoxylans (AX), polysaccharides with gelling and antioxidant capacities that can be degraded by colonic microbiota are ideal candidates for use as oral drug delivery systems. Recently, AX-based microspheres have demonstrated potential applications as colon-targeted drug carriers. The non-cytotoxicity of AX-based microspheres is a required property for their use as a colon-targeted biomaterial. This study reports the antioxidant activity and cytotoxicity on human colon cells of covalently cross-linked particles based on AX (AXP). The *in vitro* antioxidant activity of AX before and after gelation was measured using the ABTS+, DPPH, and FRAP methods. Besides, the effect of AX and AXP on the proliferation of human colon cells (CCD 841 CoN) was evaluated using the MTT assay. AXP presented a spherical shape and rough surface with a three-dimensional and porous network. Gelation decreased the antioxidant activity of AX by 61–64 %. AX and AXP did not affect proliferation or show any toxic effect on the regular human colon cell line CCD 841 CoN. The results indicate that AXP are promising biocompatible materials with antioxidant activity. AXP could be suitable materials for the development of drug delivery systems targeted to colon.

Keywords: arabinoxylan gels; antioxidant activity; cytotoxicity; human colon cells