CLOISITE 30B AND ORGANOMODIFIED CLOISITE CLAYS INDUCE CYTOTOXIC EFFECTS ON THE HUMAN HEPATIC CELL LINE HEPG2

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Abstract

Nanoclays are nanoparticles of layered mineral silicates which have attracted interest in recent years. Clays are used blended with polymers to form nanocomposites which increase the strength, mechanical modulus and toughness of the polymer while improving barrier and flame retardant properties. Layered nanocomposites have uses in a wide range of applications, for instance, food packaging products. Therefore, human can be in contact with nanoclays by food consumption once migration from the package has occurred. In spite of this increasing health concern, very few toxicity data are available nowadays. In this context, the present work aimed to study the cytotoxic effects of two clays, Cloisite 30B, a commercial one, and an organomodified Cloisite developed in the laboratory, in the human hepatic cell line HepG2. Different endpoints (total protein content, neutral red uptake and methylthiazol tetrazolium salt metabolization) were determined after 24 and 48 hours of exposure to a wide range of concentrations (up to 500µg/mL for Cloisite 30 B and up to 8 µg/mL for the organomodified Cloisite). Cloisite 30B induced significant changes in the studied endpoints from the concentration of 62.5 µg/mL. Moreover, HepG2 underwent significant damages when they were exposed to the higher concentration of organomodified Cloisite. Therefore, Cloisite 30B was found to be more toxic in this experimental model. Acknowledgements: Authors wish to thank to the MICINN (AGL2010-21210) for the funds and the Cell Culture Lab of CITIUS for their technical assistance.