(P 378) The Presence of Chitosan at the Surface Influences the Interaction of Biomolecules and Cells with Chitosan-Poly (Bultylene Succinate) Blend

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Chitosan blends with synthetic biodegradable biomaterials have been proposed for various biomedical applications. However, there are still missing details about the main surface characteristics that may benefit from the blending of these two types of materials. Hence, this work aims at characterising the surface properties of those materials and at illustrating how these properties outline the interaction with proteins involved in cell adhesion and consequently with osteoblast-like cells. Etching by polishing or by plasma was performed to compare the composition of the surface with that of the bulk. The characterization of the unmodified and modified surfaces was carried out by optical microscopy, scanning electron microscopy, Fourier Transform Infrared spectroscopy, X-Ray photoelectron spectroscopy, contact angle measurements and surface energy calculations. The adsorption of human serum albumin and human plasma fibronectin onto the different surfaces was quantified by coupling an indirect method with a colorimetric assay. A preferential adsorption of albumin over fibronectin was registered. Furthermore, the presence of chitosan at the surface of the materials enhanced the protein adsorption. The *in-vitro* biological performance of the studied materials was further investigated by a direct contact assay with osteoblast-like cells (SaOs-2). The cell culture results revealed a positive influence of chitosan over SaOs-2 morphology and activity, while a higher proliferation rate was promoted by the synthetic component. This work further confirmed the interest of combining synthetic and natural polymers, showing a distinctive advantage of using chitosan, within this strategy, to tailor the surface properties of a biomaterial thus improving its biological behaviour.