
P120. THE CYTOTOXIC EFFECT AND THE PHYSIOLOGICAL RESPONSE IN THE BIOMATERIALS APPLICATIONS

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The materials used to provide structures and/or functions in a living system are called biomaterials. They are commonly synthetic materials used to treat an injury or to function in intimate contact with living organism. Biologically, chemically and mechanically acceptance of a medical implant by the whole body is very important. And this is a prerequisite for material's biocompatibility. Biocompatibility is the appropriate host response against the material's ability in a specific application. This physiological response includes deficiency of blood clotting, resistance of bacterial colonization and normal body heating. The biomaterials and their degradation products must be biocompatible with host tissues: i.e. non-toxic, non-allergic, non-carcinogenic, and non-inflammatory. The cytotoxic effect of a material causes cell death, resulting in tissue degradation. Thus, toxicity must be determined prior the transplantation. Toxicity of biomaterials is determined by some testings based on in vitro cell culture. ISO 10993-5 regulated these methods with three testing categories. These testing categories are based on direct cell-material contact, indirect cell-material interactions and location of applications within the host. The selected cell type (e.g. somatic cell types, mesenchymal stem cells, cell lines etc.) and the origin of cells (human or other mammals, tissue type etc.) are very important for cytotoxic testing. On the other hand qualitative or quantitative method choosing is also important parameter for cytotoxic testing. Consequently, all of these toxicity tests generally consists in determining the number of cells in proliferative stage.

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