

INFLUENCE OF OXYGEN AND NITROGEN PLASMA TREATMENT ON THE BIOCOMPATIBILITY OF VASCULAR GRAFTS

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Polymer materials like polyethylene teraphthalate (PET) are commonly used as biomaterials for vascular grafts or sutures as they possess appropriate mechanical properties, and are reasonably biocompatible. However, the biocompatibility of vascular grafts with smaller diameters (less then 6 mm) is still disappointing. Therefore, we used highly dissociated weakly ionized oxygen and nitrogen plasma to improve biocompatibility of PET polymers. This technique introduces new functional groups on the surface and alters surface morphology as well as surface energy, without changing the bulk properties. In order to study the influence of plasma treatment on the adhesion and cell proliferation behaviour, we analysed surface properties of virgin and plasma treated PET polymers. Surface properties were measured by atomic force microscopy (AFM), X-ray photoelectron spectroscopy (XPS) and contact angle measurements, while the cell proliferation was analysed by MTS assay. The results showed that oxygen as well as nitrogen plasma treatment improved cell proliferation on both amorphous and semi crystalline polymers already after short plasma treatment time.