

Thesis Title A Study of the Structure-Property Requirements
for a Monofilament Absorbable Surgical Suture

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ABSTRACT

In this research project, the 'in vitro' biodegradations of two synthetic absorbable monofilament surgical sutures were studied and compared. These two sutures, currently used in surgery, are trade-named 'Maxon' and 'PDS II'; scientific names: poly(glycolic acid-co-trimethylene carbonate) and poly-p-dioxanone respectively. Their performances were compared with two non-absorbable sutures: 'Ethilon' (nylon) and 'Prolene' (polypropylene). Suture property changes in weight, intrinsic viscosity, and knot pull breaking force were determined at weekly intervals over a total immersion period of 20 weeks in a phosphate buffer medium at an initial physiological pH of 7.40 ± 0.01 and maintained at a temperature of $37.0 \pm 0.1^\circ\text{C}$. From the results obtained, a mechanism for the absorbable sutures' biodegradations could be described in terms of the various physical

