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Adel F. Badria, Petros Koutsoukos, Cristian D'Alessandro, Sotirios Korossis, Dimosthenis Mavrilas

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## Anticalcification potential of heparin on hydroxyapatite seeds using a constant composition *in vitro* model

Adel F. Badria<sup>1</sup>, Petros Koutsoukos<sup>2</sup>, Cristian D'Alessandro<sup>1</sup>, Sotirios Korossis<sup>3,4</sup>, Dimosthenis Mavrilas<sup>1\*</sup>

<sup>1</sup>Laboratory of Biomechanics & Biomedical Engineering, Department of Mechanical Engineering and Aeronautics, University of Patras, Greece

<sup>2</sup>Department of Chemical Engineering, University of Patras, Greece

<sup>3</sup>Department of Cardiothoracic, Transplantation and Vascular Surgery, Hannover Medical School, Germany

<sup>4</sup>Lower Saxony Centre for Biomedical Engineering Implant Research and Development, Hannover Medical School, Germany

\*Corresponding author: Dimosthenis Mavrilas, Assoc. Professor, University of Patras, 26500 Patras, Greece. Email: dmauril@upatras.gr

### Highlights

- Heparin is a strongly potent inhibitor for HAP crystals under physiological conditions.
- The inhibitory effect is linear proportion till certain concentration, and plateau is reached.
- The inhibitory heparin mechanism is attributed to the blocking of active sites on HAP seeds

### Abstract

Calcification is among the principal causes of biological heart valve substitute failure. Glycosaminoglycans (GAGs) are negatively charged molecules, possessing anticoagulation and anti-inflammatory activity that make them a potential solution against calcification. In the present work, the anticalcification potential of heparin was investigated under constant supersaturation conditions with respect to hydroxyapatite ( $\text{Ca}_5(\text{PO}_4)_3\text{OH}$ ; HAP). Heparin concentration in the supersaturated solutions was in the range between 0.25-3 ppm, at pH 7.40 and 37°C. Heparin showed inhibitory

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