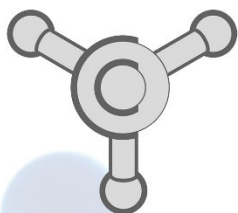


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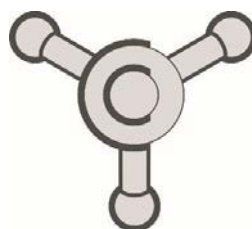
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Antibacterial activity and biocompatibility of novel composite hydroxyapatite/chitosan/gentamicin coating

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Novel composite coating based on hydroxyapatite, chitosan and gentamicin (HAP/CS/Gent) was successfully obtained by single-step electrophoretic deposition process from aqueous suspension. In order to investigate the potential application of composite HAP/CS/Gent coating, biological properties were examined. The antibacterial activity of composite coating was tested using an agar diffusion method and test in suspension against two bacteria strains- *Staphylococcus aureus* and *Escherichia coli*. Biocompatibility was evaluated by cytotoxicity testing, towards MRC-5 and L929 cell lines using MTT and DET tests. The ability of biomineralization was tested by ALP assay towards MRC-5 and L929 cell lines as model cells. Excellent antibacterial properties were observed for HAP/CS/Gent coating, especially in case of *S. aureus*. DET and MTT assays indicated low cytotoxicity against MRC-5 and L929 tested cell lines, indicating good biocompatibility. High ALP level in the cell extract implicates the good bioactivity of HAP/CS/Gent coating. Due to the compatibility of the cells, MRC-5 cell line responded better in ALP assay.

Due to good antibacterial and anti-biofilm efficacy, good biocompatibility and ability to promote biomineralization, composite HAP/CS/Gent coating can be considered for future medical application as hard tissue implant.

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