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# Investigating the tribological and biological performance of covalently grafted chitosan coatings on Co–Cr–Mo alloy

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**Abstract**

A layer-by-layer deposition technique with grafting chitosan on the Co-Cr-Mo alloy was developed. The performance of tribology and biocompatibility were investigated under simulated conditions. Wettability of coating surface was super hydrophilic and the surface was in positive charge under the neutral solution, which was favored in water-based lubricating and adhesion of cells. By pin-on-disk tests, the chitosan coating surface exhibited lower friction coefficient under various sliding speed as compared with the uncoated substratum. A wear rate of $1.1\times10^{-7}mm^3/Nm$ was detected, which was only one seventh of uncoated surfaces. Hypothetically illuminating the mechanism of antifriction is able to lead for better wear resistance. Co-culturing with osteoblast cells showed that coating had good benefits in the proliferation of osteoblast cells.

**Keywords**: Co–Cr–Mo alloy; Chitosan coatings; tribology; Bioactive

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