Advantageous long-term corrosion profile of Mo as bio-metal over Mg, Zn and Fe

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Abstract Molybdenum was recently considered as a new family member of biodegradable metals (bio-metals) with promising implications. However, its long-term corrosion behavior during the degradation in various simulated conditions remains unclear and is of great relevance to its clinical translation. In this representation, we report our studies on long-term corrosion profile of molybdenum in three different simulated body fluids up to 28 days, compared with the three other most common bio-metals, namely magnesium, zinc and iron, from the perspective of the clinical usage. We have found interestingly that molybdenum exhibited progressively advantageous long-term corrosion behavior with the lowest corrosion rate, and especially more uniform corrosion mode than the other three bio-metals. We compare also their performance under the simulated inflammatory solution and in the presence of bovine serum protein condition to find different corrosion progressions. These findings may provide an optimistic outlook in opting molybdenum as a new type of bio-metal.

Keywords Molybdenum, Biodegradable metals, Corrosion, Long-term corrosion

Reference

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