

## **Influence of Coenzyme as a Corrosion Barrier for Biodegradable Magnesium**

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**Abstract :** Magnesium is an essential element in human body and has unique characteristics such as bioabsorbable and biodegradable properties. Therefore, there has been much attention on studies on the implants based on magnesium to avoid subsequent surgery. However, high amount of hydrogen gas is generated by relatively severe corrosion of magnesium especially in aqueous condition with chloride ions. And it contributes to the causes of swelling of skin and causes consequent inflammation of soft tissue where is directly in contact with implants. Therefore, there is still concern about the safety of the using biodegradable magnesium alloys, which is limited to various applications. In this study, we analyzed the influence of coenzyme on corrosion behavior of magnesium. The analysis of corrosion rate was held by using Hanks' balanced salt solution (HBSS) as a body stimulated fluid and in condition of 37°C. Thus, with deferring the concentration of the coenzyme used in this study, corrosion rates from 0.0654ml/cm<sup>2</sup> to 0.0438ml/cm<sup>2</sup> were observed in immersion tests. Also, comparable results were obtained in electrochemical tests. Results showed that hydrogen gas produced from corrosion of magnesium can be controlled.

**Keywords :** biodegradable magnesium, biomaterials, coenzyme, corrosion

**Conference Title :** ICBRM 2017 : International Conference on Biomaterials and Regenerative Medicine

**Conference Location :** Montreal, Canada

**Conference Dates :** May 11-12, 2017