Magnesium's Impact as a Biomaterial in Biodegradation

Polymers; Biomaterials; Biodegradation

Several techniques, including the creation of a magnesium alloy and surface property modifications, are used to customize the rate of degradation because the goal is for biodegradable magnesium-based implants to exhibit controlled degradation and meet application-specific requirements. The biodegradation mechanism, as well as its regulating elements and remediation strategies.

Biomaterials frequently suffer from fatigue, erosive wear, and corrosion. The properties of the biomaterial are necessary for osseointegration to be accepted. Biocompatibility and mechanical endurance are the two most important factors that are considered for any type of engraft, whether it be temporary or permanent. Incorporating two or more implants requires strong corrosion resistance. The rate of degradation is also important for biodegradable materials. The implant material needs to be biologically stable when it comes into contact with blood, soft tissues, and extracellular fluid, in contrast to its mechanical properties. The implant medium needs to have characteristics like high corrosion resistance, wear resistance, and biocompatibility with human bone in order to encourage osseointegration. The majority of biomaterials are composed of polymers.

Polymers, ceramics, metals, and their composites make up the majority of biomaterials. Currently, common materials are used, such as titanium and stainless steel that contains cobalt and chromium. Metallic materials play an important role as a biomaterial by helping to replace or heal damaged or diseased bone tissue, in contrast to polymer and ceramic materials. Their high fracture toughness and mechanical strength are the reasons for this [1-3]. Metallic biomaterials have been the most well-known biomaterials used in the treatment of musculoskeletal disorders and coronary heart disease. Its mechanical and biological properties, which are generally favorable, are primarily responsible for this. In this sense, the materials most frequently utilized in biomedical applications are titanium (Ti) and its alloys, cobalt-chromium alloys, stainless steels.

With the exception of magnesium, the majority of these bio-metallic compounds have a high elastic elasticity that leads to stress

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