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## Material properties and clinical performance of a fully resorbable, fast healing stimulating calcium-based bone substitute

A series of synthetic, inorganic, highly osteoconductive and fully resorbable calcium-based bone substitute materials (Ezechbone®) has been developed by a joint research project of National Cheng-Kung University and Joy Medical Devices Corporation of Taiwan. Reported in this presentation include non-clinical performance and clinical follow-ups for different applications. Ezechbone®granule is a highly porous granular product characterized by its high resorption rate (totally resorbed and replaced by new bone in 3-6 months), while Ezechbone®cement is featured by its unique non-dispersive behavior when contacting blood/body fluid without the need of any polymeric or another binder additive. This cement can be applied directly after forming a paste or injected into bone void via a minimally invasive procedure. The safety and efficacy of these medical devices are confirmed by a series of chemical/physical characterization and biocompatibility tests such as cytotoxicity, sub-chronic toxicity, intracutaneous reactivity, skin sensitization, ocular irritation, endotoxin test, hemolysis test, genotoxicity, and implantation. Animal models for implantation tests include SD rat femur body, New Zealand white rabbit femur condyle and mandible, Lanyu pig mandible, and osteoporotic goat spine. The histopathologic examination indicates that the implant is always intimately integrated with surrounding bone tissues. Majority of Ezechbone® Granule is readily resorbed and replaced by new bone generally in a one-to-one resorption manner as early as 4W post-implantation. The early-stage new bone formation is far faster in Ezechbone® Granule group than in an autologous group. Clinical case reports include sinus lift, ridge augmentation, frontal bone augmentation and treatment for various types of fractures.

### Biography

Jiin Huey Chern Lin received her Ph.D. from Northwestern University Dept. of Biological Materials (Chicago, Illinois). She is Director of the Center for Biomaterials Research, National Cheng-Kung University (Tainan, Taiwan) and Technology Founder/CTO of Joy Medical Devices Corp. (Luzhu, Kaohsiung). Professor Chern Lin has published 100+ SCI papers along with 60+ US patents and 90+ non-US patents.

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