

## Natural Polymer, zein for tissue regeneration

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**Z**ein is the major storage protein of corn and comprises 40-50% of total endosperm proteins. Zein has been used as microspheres to delay the release of drugs and to protect the drugs from degradation by pepsin, thus can release the drugs for a long time. Our laboratory has developed zein as a novel and potential biomaterial for Tissue Engineering. Firstly, a three-dimensional zein porous scaffold was prepared and showed to be suitable for culture of various cell lines and primary cells such as human umbilical vein endothelial cells (HUVECs) and mesenchymal stem cells (MSCs) *in vitro*. The scaffolds are characterized with interconnected pore, controllable pore sizes, especially excellent mechanical properties, which are controllable and suitable to act as bone substitutes. Next, we examined its tissue compatibility in a rabbit subcutaneous implanting model, the histological analysis revealed a good tissue response and degradability. The third, zein porous scaffolds modified with fatty acids have shown great improvement in mechanical properties and also good cell compatibility *in vitro*. Besides, the complex of zein porous scaffold and mesenchymal stem cells (MSCs) could effectively promote the ectopic bone formation in nude mice and the repair of critical-sized bone defects in the rabbit model.

### Biography

Jin-Ye Wang has received her Ph.D from Tohoku University, Japan (1992). She was working as a Professor of Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences (2000-2009), Adjunct Professor of Shanghai Jiao Tong University (2003-2009), and now Professor of Biomedical Engineering and Team Leader of Biomaterials Lab, Shanghai Jiao Tong University. She has published over 80 SCI papers, 4 books (chapters), and 13 Chinese patents and one US patent were authorized. She was the Invited Speaker of European Conference on Biomaterials, Pacificchem et al., awarded by the Hundred Talent Program of the Chinese Academy of Sciences (1999), Life Sciences Prize from Meiji Dairies Corporation (2008) et al. Her research interests include Tissue Engineering, Controlled Release and Fluorescent Probe, Biomimetic Materials and Biointerfaces.

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