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Photo-curable natural polymer derivatives for bio-medical application

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To be biomedical applications, these materials require properties such as biocompatibility, biodegradability, and low-toxicity. Chitosan is a natural polymer with these properties. In addition, chitosan has anti-bacterial activity. For this reason, chitosan is suitable as a biomaterial. Growth factors are biomolecules, mainly proteins. Growth factors such as epidermal growth factor, transforming growth factor- β and bone morphogenetic protein-2 play an important role in the physiological activity process. Although growth factors affect their diverse physiological activities in biological processes, their biomedical applications are very limited. Because growth factors have a half-life that causes to rapidly decrease the physiological activity in the body. Protein immobilization methods are a way to solve these problems. Various immobilization methods have been developed. However, methods using chemical agents may form by-products that can potentially cause denaturation of immobilized protein. It is also difficult to immobilize them in the same chemical method because the residue of each amino acid is different. To solve these problems, our research team have developed a photo immobilization method for immobilizing proteins using UV and visible light photo-reactive chitosan derivatives. The additional advantages of this method are relatively simple process, low cost, easy scale-up, and low toxicity. Photo immobilization methods will be used to immobilize various biomolecules. Our research team report the preparation of photo-reactive chitosan derivatives that can be used for the immobilization of various biomolecules via photo-immobilization method.

Biography

Tae-II Son has completed his PhD from Tokyo Institute of Technology, Japan in 1989. Currently, he is a Professor in the Department of Systems Biotechnology, Chung-Ang University, Republic of Korea and the President of Biomaterial Field in The Korean Society of Industrial and Engineering Chemistry (KSEC). He has published more than 80 papers in reputed journals.

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