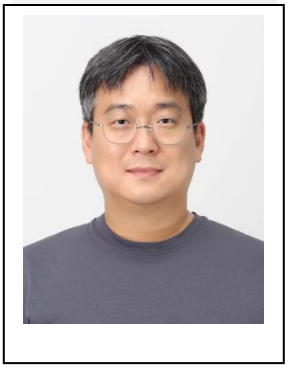

이름: 오창명/Chang-Myung Oh
직위: 부교수/Associate Professor
소속: 광주과학기술원/
Gwangju Institute of Science and Technology
기타소속: 의생명공학과/Biomedical Science and Engineering

강연제목:

다공성 수화젤 섬유 기반 3 차원 뇌하수체 종양모델

Hydrogel-fiber-mesh-based 3D cell cultures: A new method for studying pituitary tumors

Abstract(영문):

Acromegaly is a challenging medical condition that arises from the excessive production of growth hormones and the insulin-like growth factor 1 in the pituitary gland. While surgery is the primary treatment for acromegaly, medication is increasingly being used in patients who are unsuitable for surgery or have experienced treatment failure. Despite advancements in medical and surgical therapies, the treatment of acromegaly remains challenging. In this research, a three-dimensional (3D) in-vitro cell culture model for pituitary adenoma research was developed using hydrogel fiber meshes (HFMs) and GH3 cells. Electrospun nanofibers based on polyvinyl alcohol and polyacrylic acid were converted into HFMs by hydrogelification with the leaching of electrosprayed cellulose acetate beads for porosity enhancement. GH3 cells grown in the 3D model exhibited increased dispersion and upregulation of the somatostatin receptor subtypes 2 and 5 compared to those grown in traditional 2D cultures, as well as high sensitivity to somatostatin analogs and tumor-like profiles (as indicated by functional assays and transcriptome analysis, respectively). Therefore, the proposed 3D model accurately represents the physiological response to pituitary-adenoma therapeutic agents. This study highlights the potential of HFMs as a versatile platform for 3D in-vitro cell culture models that can be employed for pituitary adenoma research. Moreover, the proposed 3D cell culture model may contribute to a deeper understanding of tumor biology and facilitate the development of effective therapeutic strategies for acromegaly.

Brief Biosketch

2019~ Present: Associate Professor, Department of Biomedical Science and Engineering, Gwangju Institute of Science and Technology

2017~ 2019: Clinical Assistant Professor, Department of Endocrinology, CHA Bundang Medical Center