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11ᵗʰ World Congress on

CELL & TISSUE SCIENCE

May 09-10, 2018   Tokyo, Japan

Production of spheroids from HT-29, Caco-2 and SW48 cell lines

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Spheroids, which are known as microtumors, are well characterized models to mimic the natural environment for 3D culture. They can be used for assays that are drug screening, tumor growth and proliferation, immune interactions, invasion, matrix remodeling and angiogenesis. There are four general methods of spheroid formation; suspension culture, non-adherent surface methods, hanging drop methods and microfluidic methods. The hanging drop technique is one of the simplest and cheapest methods inside of them. This study is aimed to use different cell density for forming spheroids while focusing on cell growth conditions, cell proliferation and population and compare spheroids of three cell lines. Three human colon adenocarcinoma cells (Caco-2, HT-29 and SW48 cells) were seeded at a density of 105, 2×105 and 4×105 cells/well. The changeover time of spheroids was determined using ImageJ program. It was shown that the morphological appearance of spheroid was cell line dependent and the fluorescence microscope examination revealed that the general characteristics of spheroid formation were similar in HT-29 and SW48 cell lines, however; Caco-2 cells formed weaker than others. According to our findings, concentrations of cells, which are 2×105 and 4×105, were not found suitable for transferable spheroids. However, density of 105 cells were found transferable and remained proliferative by the end of the culture period. There are some articles, which include the seeding density from as few as 50 cells to as many as 105 cells for many type of cells. In this study, we observed that density of 105 is useful for this method, but 2×105 and 4×105 are not suitable for long-term culture for these cell lines.

Biography

Ozgenur Yilmaz is currently a PhD student at Institute of Health Sciences, Department of Microbiology. She studies about probiotics, colon cancers and wound healing by using cell culture techniques.

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