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Volume 8, Issue 4-2, 2018, Pages 1648-1653

Development of Porous PCL based microcarrier (Article)

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Abstract

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Polycaprolactone (PCL) has been used for cell cultivation due to its biocompatibility. Emulsion solvent evaporation method is widely used in fabrication of sphere base microcarrier. The fabricated microcarrier can be further modified based on the preferences toward the ideal microcarrier. The significant characteristics of ideal microcarrier are the uniform size of microcarrier, density and surface properties of the microcarrier. The uniform size of microcarrier is important to determine the average viable cell in culture. The ideal density of microcarrier should be slightly higher than the density of water. This is to ensure the fabricated microcarrier is in suspension in culture medium with minimal agitation exert. The surface of microcarrier should contain a functional properties either the surface charge or the microbiological component that may attract cell to adhere and proliferate on the microcarrier. In this study, microcarrier were fabricated with micropores structure, this is to provide larger surface area per volume with intention to increase number of cell proliferation on the microcarrier. From the result, size distribution of the fabricated microcarrier and the size of pore generated on microcarrier were affected by most of the parameters tested such as stirring speed, PVA concentration, camphene concentration, temperature and ratio between PCL and solvent. Optimum pore size was generated at 20% camphene concentration with the average size of 11.74 μm which is conducive for cells to attached and populated well within the pores. The surface properties of developed porous can be improved for potential application in cell culture research and development, as well as in tissue engineering. © 2018, Insight Society.

SciVal Topic Prominence [i](#)

Topic: Microspheres | Pharmaceutical Preparations | emulsion solvent

Prominence percentile: 96.717 [i](#)

Author keywords

[Cell culture](#) [Halal](#) [Microcarrier](#) [Polycaprolactone](#) [Porous](#)

ISSN: 20885334

Source Type: Journal

Original language: English

Document Type: Article

Publisher: Insight Society

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