≪ Artificial cell tissue (3D cell co-culture system) ≫

＜Summary of the invention＞

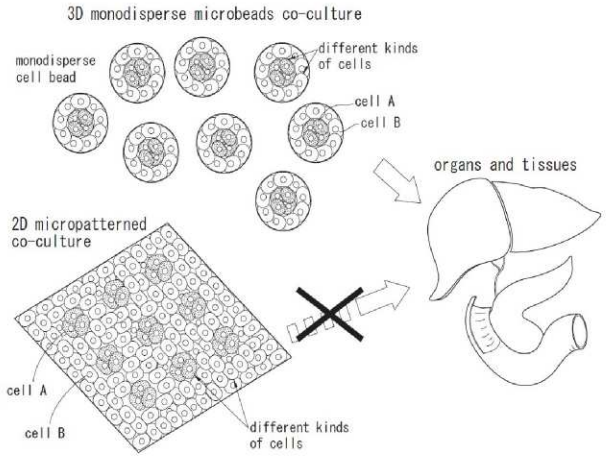
¦ Conventional Technology

There are several 3D cell co-culture systems; for example, those having different types of cells dispersed in gels or those with sheets of cells being layered. However, in these systems, the orientations of cells cannot be controlled, and the construction of 3D structure with several types of cells is difficult because same type of cells tend to aggregate with each other. It is also difficult to form stratified 3D-structure in micro-scale by using relatively large sheets of cells.

¦ Current Invention

◆Method

Uniform micro-sized gel spheres encapsulating cells were first formed by using a microchannel. Then, microbeads which have stratified 3D-structure onsisting of several types of cells were formed by seeding the cells over the spheres.



◆Example

3T3 and HepG2 cells were co-cultured in the 3D-structure. It was confirmed that the secretion rate of albumin from HepG2 cells was increased compared to cultures of the same cells in the 2D-structure. The result indicated that better reconstruction of liver function can be accomplished by this method.
The viability of cells can be maintained by regulating the size of the microspheres. When the microspheres were incubated in millimeter-scale templates, the stratified 3D-structure was rapidly formed within 24 hours. The resulting microbeads have a uniform cell density and excellent cell viability.

◆Possible Application

For example, an in vivo-like model of liver tissue can be prepared as drug discovery tools for the evaluation of drug metabolism.

＜**Inventor**＞ Associate Professor Shoji Takeuchi et al., the University of Tokyo

＜**Notes**＞ Patent Pending

＜**Contact**＞
The University of Tokyo's TLO. (Todai TLO)(CASTI) Aya UMEDA
Tel: +81-3-5805-7671 Email: umeda@casti.co.jp HP:http://www.casti.co.jp/