

Carbon Nanotube Coated Dish Culturing Cells and Vaccines

Check these out

- CNT coated dishes are polystyrene dishes with cell culture vessels with wet-coated CNTs.
- To the naked eye, the CNTs are effectively transparent. However, when viewed through an electron microscope, CNTs combined in a random mesh structure can be seen.
- This mesh structure is the scaffold for cells and can be used to verify improvement in the culturing function. The CNTs themselves are extremely thin, with diameters of about 1nm, but the network itself is comprised of a bundle of several CNTs.
- As for the cell proliferation mechanism, the CNTs themselves, which are the scaffold for cells, are extremely compatible with FBS serums and other serums, and it is thought that FBS serum components are absorbed effectively on the CNT network.
- Also, with CNT coated dishes using single-walled CNTs (SWNT FH-P), proliferated cells can be easily removed, and if cell recovery is done in the usual way, the single-walled CNTs barely come away from the dish at all.
- For adherent cells like osteoblast cells, excellent effects have been seen when serum concentration is low.
- Also, the CNT network structure provides conductivity ($5000\Omega/\square \sim 10000\Omega/\square$ approx.), and if electrodes are installed in the base, electric stimulation can be easily given to the cells.

Product Outline



Basic Performance

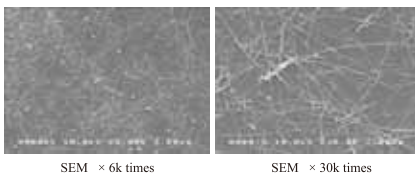
Type of dish	polystyrene φ35mm, φ60mm
Type of carbon nanotube	single-walled CNT (SWNT FH-P)
Amount of CNT coating	>3.6μg (φ35mm), >10μg (φ60mm)
Additive agent (surfactant)	not used
Sterilization	EOG sterilization

*These are representative, not guaranteed values.

Example

Experiment of Cultivating Osteoblast-like Cells(Saos2) on CNT Coated Dish.

CNT Coat Dish @Meijo Tube FH-P

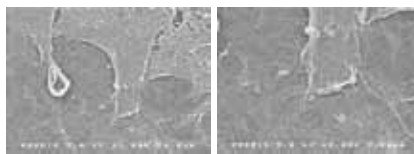


SEM × 6k times

SEM × 30k times

CNT Coat Dish @Meijo Tube FH-P

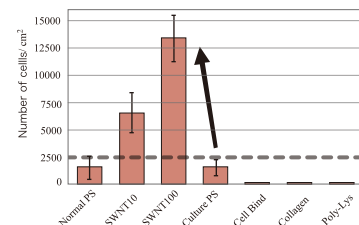
The Saos-2 cells cultured on CNT Coat Dishes



SEM × 3k times

SEM × 6k times

Saos2(1.0×10^4 cells/φ6cm dish):10%FBS DMEM :37°C: 5%CO₂:1week



We implemented cell culturing in a low-serum culture medium, using a Meijo Nano Carbon CNT coated dish (10μg/dish、100μg/dish). For the cell culturing, we added 4ml of Dulbecco's Modified Eagle Media (DMEM) with 1% Fetal Bovine Serum (FBS) and 1% PSN Antibiotic Mixture added to it, and, so that osteoblast-like cells (Saos2) would become 5×10^4 /dish, disseminated and incubated in a 37°C, 5% CO₂ environment. Then, after staining, we counted the number of cells using an optical microscope.

For comparison, we used a non-treated polystyrene dish (made by company A), a cell-culturing polystyrene dish (made by company A), a high cell adhesion polystyrene dish (made by company A), a collagen coated polystyrene dish (made by company B), and a polylysine coated polystyrene dish (made by company B).

This data is provided by Tsukasa AKASAKA, Biomedical & Dental Material & Engineering, Hokkaido University