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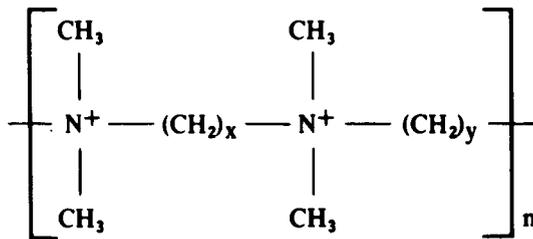


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Ionene Treatment of Surfaces Stimulates Cell Growth

When cells are cultured in glass or polystyrene, the rate of cell growth depends (among other things) upon the number of cells adhering to the walls of the container. This number can be increased by chemically pretreating the walls. A polyelectrolyte, ionene, has been found to give a more effective pretreatment than any currently used chemicals.

Ionenes have the structure



Two ionenes were evaluated: $x = 3, y = 3$ and $x = 6, y = 10$. Both were chlorides.

To determine the effectiveness of the ionenes, several experiments were conducted comparing cell growth with commercial pretreatments to cell growth with ionene pretreatments. The samples used were WI-38 (normal lung cells), the same cells treated with SV-40 (simian virus), and rat kangaroo epithelial cells. Both glass and polystyrene containers were used. For both types of containers, ionene pretreatment was found to markedly enhance cell adherence and cell spreading. The 6,10 ionene was superior to the 3,3 ionene.

The pretreatment was effected by immersing the container in a dilute ionene solution for 30 minutes and rinsing twice. Studies showed the optimal ionene concentration to be 2 to 4 $\mu\text{g}/\text{ml}$ (a 10-percent increase in growth rate). A concentration of 8 $\mu\text{g}/\text{ml}$ was lethal.

Note:

Requests for further information may be directed to:

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Reference: TSP75-10121

Patent status:

Title to this invention has been waived under the provisions of the National Aeronautics and Space Act [42 U.S.C. 2457(f)], to the California Institute of Technology, Pasadena, California 91109.

Source: Alan Rembaum, Marylou Ingram, and Agnes Stroud-Schmink of Caltech/JPL and Donald E. Rounds of Pasadena Foundation for Medical Research under contract to NASA Pasadena Office (NPO-13421)

Categories: 04 (Materials)
05 (Life Sciences)