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JOURNAL ARTICLE

Sertoli cell-conditioned medium affects nucleoside utilization in vitro

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Rat Sertoli cell-conditioned medium (SCCM) or low molecular weight filtrate of SCCM (< 1,000 Da molecular weight) inhibited the uptake of [3H]thymidine into cells in culture; [3H]thymidine is incorporated into DNA by means of a salvage pathway. The incorporation of radioactivity into DNA from [14C]N5,N10-methylene-tetrahydrofolate, required for the thymidylate synthetase reaction, was not inhibited by SCCM and reflected the increase in cell number. SCCM specifically inhibited the incorporation of pyrimidines ([3H]uracil, [3H]thymidine) with no effect on the transport or incorporation of [3H]adenosine. Inhibition of thymidine uptake by SCCM could have occurred by a direct competition, i.e., the secretion of thymidine into the medium by the Sertoli cells, or by an indirect mechanism that would result in an inhibition of transport. The activity was partially purified by membrane ultrafiltration, ion exchange chromatography, and sequential extraction. Addition of SCCM filtrate (< 1,000 Da molecular weight) to growth-arrested cells cultured in the presence of inhibitors of dihydrofolate reductase resulted in cell proliferation, suggesting that the factor is involved in thymidine biosynthesis. This activity may play a role in the regulation of nucleoside biosynthesis and/or utilization in the testis.

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