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JOURNAL ARTICLE

Polarized Sertoli cell functions in a new two-compartment culture system

A. Janecki and A. Steinberger

Sertoli cells in vivo are highly polarized and interact with the inner (tubular) and outer (interstitial) fluids. To simulate this condition in vitro we developed a two-compartment culture system in which confluent Sertoli cell monolayers were grown on permeable supports (Millipore filters) separating the inner and outer fluid compartments. Monolayer permeability to (3H)-inulin decreased by 90% after 5 to 7 days of culture, presumably due to formation of tight junctions. This process was influenced by cell plating density. The cells were highly polarized morphologically, resembling their appearance in vivo, and secreted transferrin bidirectionally into both fluid compartments. The amount of transferrin secreted was 166% to 250% of that secreted by the same number of Sertoli cells cultured in plastic dishes. Testosterone (5×10^{-8} M) doubled and testosterone + FSH (0.1 microgram/ml) increased transferrin secretion 3.6-fold. These results demonstrate that under suitable culture conditions the Sertoli cells remain both morphologically and functionally polarized, reflecting a more physiologic state.

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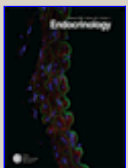
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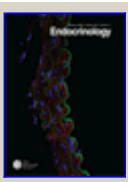
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