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Fowl plasma : Does it contain growth factors?

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Growth-inducing propensities of fowl plasma were studied to reveal the presence of unknown growth factors.

Fresh, unfixed organs and tissues were cut aseptically into pieces of 15 mm × 20 mm and transferred directly into sterile tubes containing about 3 to 4 ml of fresh fowl-plasma obtained from the wing-vein of a fowl using sequestrene (EDTA) as an anticoagulant. The fowls used were adult White Rocks or White Leghorns. The tubes were allowed to stand overnight at room temperature. Simultaneously, a corresponding specimen of the same size was fixed in Carnoy's fluid which also served as a control for a conventional histopathological examination. After 18-20 hr the cut surface of the fowl-plasma-treated specimen was gently scraped using a scalpel and the material so obtained was trasferred directly on to slides for preparation of both wet mounts and scrape smears for cytomorphlogical studies.

Wet mount preparations were studied immediately under a light microscope for living cytology. Air-dried scrape smears were stained with Wright's or Leishman stain for corresponding stained smear cytology. Conventional paraffin embedded sections were cut from both, and stained with haematoxylin-eosin for collative and comparative histological studies.

Independent of the tissue of origin, the common feature in the cytomorphological studies was the tremendous growth of spindle cells in the form of long sprouts showing morphological appearance of endothelial cells. These cells formed closely packed bundles with characteristic undifferentiated cells, which showed gradual morphological transformation to epithelium (Shenoi 1989).

The histological sections showed these spindle cells arising from the sinusoids, or vascular structures like myometrial vessels and high endothelial venules of the tonsil. The entire sequence of transformation from the undifferentiated cells showed sequential differentiation in this culture study. This study provides evidence not only for the presence of significant quantities of growth factors in fowl plasma, but also evidence of the extrinsic heterogeneity which different endothelial exhibit in culture (Rosendaal 1990, personal communication).

The greatest advantage of this method over conventional cultures was that in the fowl plasma cultures the cells grow, not only showing homoplastic proliferation, but also heteroplastic differentiation. It is hoped that this methodology would find a place in the study of normal and tumour histogenesis.

REFERENCE

Shenoi B V. 1989. Cytohistologic Evidence for a Stem Cell Role of Endothelium in Histogenesis; It's Implication for Medicine Monograph, Bharat Gold Mines Limited Hospital, KGF, INDIA.

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