

SPATIOTEMPORAL DISTRIBUTION OF POLYSACCHARIDES DURING THE MAMMALIAN AUDITORY ORGAN DEVELOPMENT

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Although the structure of the auditory organ in mature mammals, the organ of Corti, is clearly established, its development is far from being elucidated. Using cytochemical methods at the light and electron microscope levels, we examined the spatiotemporal distribution of polysaccharides during the development of the organ of Corti in rats from embryonic day 16 (E16) to postnatal day 15 (P15).

At E16, small polysaccharide inclusions could be detected in the cytoplasm of future inner pillar cells by electron microscopy only. These inclusions became obvious at the light microscope level at E17. At E19, the polysaccharide deposits were important within the inner pillar cells and they arose in the Hensen cell cytoplasm. Polysaccharide accumulations also appeared in the outer pillar cells and in the Deiters cells from P3-P4. As the organ of Corti developed, the amount of polysaccharide inclusions within the inner and the outer pillar cells decreased. At P15, large amounts of polysaccharide deposits were visible in the Deiters cells whereas they had almost disappeared from the inner and outer pillar cells.

Finally, we showed that the polysaccharide deposits present in the developing organ of Corti are PAS-positive and can be digested with a salivary amylase, suggesting that they are essentially constituted of glycogen.