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THE INTERACTION BETWEEN THE CYTOKINE LIF AND NEUROTROPHINS ON SPIRAL GANGLION CELLS

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The survival of auditory neurones depends on the continuous supply
of trophic factors. Hair cells within the cochlea are known to produce
and supply growth factors responsible for the survival and growth of
surviving neurones. As a result of trauma, disease or ageing,
cochlear hair cells are lost, and consequently, the supply of growth

factors is reduced, leading to a secondary wave of auditory nerve degeneration.

Neurotrophins and cytokines are two families of growth factors reported to have activity in the cochlea. Moreover, it is suggested that neurotrophins and cytokines act synergistically upon sensory nerve cells, although the mechanism of this synergistic effect is unknown. It has, however, been suggested that one of the growth factors could be involved in the maintenance of basic cellular metabolic function, while the other could be involved in differentiation events.

The current study involves a primary cell culture of cochlear neurones (spiral ganglia neurones) in vitro. These cultures are being used to investigate the action of exogenous growth factors on the process of outgrowth and survival of auditory nerve cells, in order to find combinations of growth factors that could be applied to maintain and/or repair auditory neurones in vivo.

Preliminary findings suggest that the cytokine Leukaemia Inhibitory Factor (LIF) displays trophic activity of spiral ganglion neurone cultures. The more definitive findings and interaction between LIF and the neurotrophines will be reported.



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