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S8 4 ALTERATIONS IN CHOLINERGIC INNERVATION IN THE AUDITORY SYSTEM OF HAMSTERS WITH AUDIOGENIC EPILEPSY OF GENETIC ORIGIN.

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Using histochemical and immunohistochemical techniques we have analysed the distribution of the cholinergic enzymes acetylcholinesterase and cholineacetyltransferase in the central and peripheral auditory system of adult golden hamsters (*Mesocricetus auratus*), both normal and with hereditary audiogenic epilepsy (GPG/VALL strain).

As in other rodents, the hamster auditory system has few cholinergic neurons. Among them can be found most of the medial and lateral olivocochlear neurons, which are related to the outer and inner hair cells of the organ of Corti, respectively.

GPG/VALL hamsters have fewer olivocochlear neurons, especially the medial type, whose soma is located in the ventral nucleus of the trapezoid body.

Following histochemical staining for acetylcholinesterase, it was seen that the cochlea of normal hamsters has cholinergic olivocochlear fibres that are localised along all the turns. By contrast, in GPG/VALL hamsters a marked decrease was seen in the cholinergic innervation of the cochlea, together with the almost complete lack of medial olivocochlear fibres. This was accompanied by a dramatic decrease in the number of outer hair cells (OHC). The few stained fibres innervating the OHC were simpler and had smaller terminals than those observed in the normal hamsters. Apparently, the lateral olivocochlear fibres were unaltered.

Acetylcholine has been purported to participate in protection against very loud sounds, mainly through the medial olivocochlear system, and in the regulation of developmental phenomena, such as neuron growth or synaptogenesis. The role that the decrease in olivocochlear innervation plays in the possible atrophy of the OHCs and in the triggering of audiogenic seizures is discussed.

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