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# EFFECT OF ACETYLCHOLINE ON IN VITRO IL-2 PRODUCTION AND NK CELL CYTOTOXICITY OF RATS

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*ABSTRACT*

*In the present study, we explored the effect of acetylcholine (ACh) on lymphocyte function and the receptor mechanisms mediating the effect. Concanavalin A (Con A)-induced interleukin-2 (IL-2) production and natural killer (NK) cell cytotoxicity were used to assess function of the T lymphocytes and the NK cells from rat spleens. Muscarinic ACh receptors (mAChRs) agonist pilocarpine and antagonist atropine, as well as nicotinic ACh receptors (nAChRs) agonist nicotine and antagonist tubocurarine were used to determine the action pathways of ACh on T and NK cells. ACh at the concentrations of $10^{-10}$ to $10^{-8}$ M exerted an enhancing effect on Con A-induced IL-2 production and an inhibitory effect on NK cell cytotoxicity. Both pilocarpine and nicotine at the same doses as ACh could mimic these effects of ACh. The enhancing effect of ACh on IL-2 production could be blocked by either atropine or tubocurarine. But the inhibitory effect of ACh on NK cell cytotoxicity was abolished only by atropine, not by tubocurarine. These results suggest that ACh, which is a neurotransmitter of peripheral parasympathetic nervous system, can regulate function of T and NK cells, and the different regulatory effects of ACh on the two types of lymphocytes may be mediated by the different receptor mechanisms.*