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# Modulation of immunization via cholinergic nervous system using HI-6

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## Abstract

HI-6 is a compound known is some sources as asoxime. It is used as an antidote to nerve agents. When HI-6 administered to the poisoned one, it causes return of acetylcholinesterase (AChE) activity. In recent works, we proved that HI-6 acts as an antagonist to acetylcholine receptors (AChR) including the nicotinic receptor, alpha 7 nAChR which is involved in regulating the immune response through macrophages. The here presented experiment reports the efficacy of HI-6 to regulate the immune response. Laboratory BALB/c mice received HI-6 and/or keyhole limpet hemocyanin (KLH) as an antigen. Controls received saline or a combination of Freund´s complete adjuvant and KLH. Antibody production was investigated after either 21 or 65 days when either single or repeated dose of antigen was applied. We confirmed that HI-6 significantly improved vaccination efficacy when KLH was given in a dose of 1 mg/kg. The effect was dose dependent: repeated HI-6 produced no on further improvement of the vaccination. A combination of HI-6 and KLH produced a vaccination of almost the same efficacy as that for Freund´s complete adjuvant. The findings point at the suitability of HI-6 for improving vaccination efficacy at the level of immunity regulation by the nervous system. Acknowledgments: The Ministry of Education, Youth and Sports of the Czech Republic is gratefully acknowledged for project LH11023. The funder had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

## Biography

Miroslav Pohanka, RNDr, PhD has completed his Ph.D from biochemistry at Masaryk University, Czech Republic. Currently, he is an associated professor and head of a research group in Faculty of Military Health Sciences, University of Defence, Czech Republic. He published more than 150 papers in journals with IF and he serves as an editorial board member of Journal of Biosensors and Bioelectronics, Journal of Bioterrorism and Biodefence, Journal of Biosafety, Obesity and Weight loss Therapy. He leads national and international projects on analytical devices construction, immunomodulation and others. His major research activity is given to construction of analytical tools for diagnosis / detection of pathogens, immunomodulation research and research on drugs regulating cholinergic nervous system.