Autoimmunity induced by adjuvant hydrocarbon oil components of vaccine.
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Abstract
Adjuvant oils such as Bayol F (Incomplete Freund's adjuvant: IFA) and squalene (MF59) have been used in human and veterinary vaccines despite poor understanding of their mechanisms of action. Several reports suggest an association of vaccination and various autoimmune diseases, however, few were confirmed epidemiologically and the risk of vaccination for autoimmune diseases has been considered minimal. Microbial components, not the adjuvant components, are considered to be of primary importance for adverse effects of vaccines. We have reported that a single intraperitoneal injection of the adjuvant oils pristane, IFA or squalene induces lupus-related autoantibodies to nRNP/Sm and -Su in non-autoimmune BALB/c mice. Induction of these autoantibodies appeared to be associated with the hydrocarbon's ability to induce IL-12, IL-6, and TNF-alpha, suggesting a relationship with hydrocarbon's adjuvanticity. Whether this is relevant in human vaccination is a difficult issue due to the complex effects of vaccines and the fact that immunotoxicological effects vary depending on species, route, dose, and duration of administration. Nevertheless, the potential of adjuvant hydrocarbon oils to induce autoimmunity has implications in the use of oil adjuvants in human and veterinary vaccines as well as basic research.

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PMID: 15194169 [PubMed - indexed for MEDLINE]

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