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DHEA Modulates Immune Function: A Review of Evidence

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Abstract

DHEA and DHEA-S have numerous associations with multiple aspects of immune function and are often characterized as beneficial and supportive of immunocompetence. However, closer inspection of these studies reveals confusion regarding the immunological components modified, the mechanisms of action, and degree of impact, and even whether these hormones even have direct action or are mediated by metabolites and interactions with other hormones and hormone receptors. Additionally, much of the research is conducted on rodent models using very high concentrations of hormone supplements, which may not be representative of the effects of these hormones in natural circulating concentrations, or may not translate to human physiology in a meaningful way. Here, we review the effects of DHEA and DHEA-S on immune function and examine the potential roles these hormones play on specific components of immune function. Drawing from the literature on hormone supplementation, as well as studies examining the natural circulating levels of DHEA and DHEA-S on specific immunological components and disease processes, we argue that DHEA has differential actions on human immune function, and that its effects are further shaped by concentrations of other hormones. Of particular interest is the role of DHEA as an antiglucocorticoid, and for its actions on both androgen and estrogen receptors. With additional research, DHEA may be useful as a therapeutic, particularly in diseases with high levels of inflammation, or where adrenal production is altered. The convoluted nature of DHEA-immune interactions makes direct effects difficult to interpret, and future research needs to consider direct, intracrine, and downstream effects of these hormones.

Keywords: DHEA; DHEA-S; Glucocorticoids; Hormone-mediated immunity; Immunomodulation; Inflammation; Supplementation.

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