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Authors: Boris Tchernychev, Talia Miron, Meir Wilchek

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## Epitope Identification of Specific Naturally Occurring Human Anti-avidin Antibodies

Boris Tchernychev, Talia Miron and Meir Wilchek

Department of Biomolecular Science, Weizmann Institute of Science, Rehovot, Israel

Abbreviations: ASA-allium sativum agglutinin, NL-avidin- deglycosylated and neutralized avidin, CNBr-cyanogen bromide

### Highlights

- Naturally occurring human anti-avidin IgG and immunized rabbit anti-avidin common epitopes were characterized and synthesized.
- Such epitopes suggest promising applications in several fields of research and medicine. They may serve as
- inhibitors preventing the rapid elimination of avidin from the circulatory system when administered for diagnostic or drug-delivery purposes
- competitors that neutralize antibodies causing immunological adverse reactions
- tools to study the function of “biologically redundant” anti-dietary IgG class antibodies in the serum of healthy and symptomatic individuals

### Abstract

Human serum contains natural antibodies against avidin. Affinity purified natural anti-avidin human IgG exhibits affinity constants comparable to those of antibodies produced by active immunization of rabbits. Using a random hexapeptide library displayed on the filamentous M13 phage, and rabbit anti-avidin purified antibodies as a selector, we searched for epitopes shared by both selector and natural human anti-avidin IgG. This approach, enabled the isolation and identification of phagotopes bearing consensus motifs similar to sequence stretches of the avidin loops and  $\beta$ -sheet regions. These phagotopes were recognized by the natural human anti-avidin antibodies. The fact that natural anti-avidin antibodies in human serum have similar epitopes to those of IgG elicited by active immunization of animals, led us to suggest that small peptide epitopes may prevent deleterious effects caused by antibodies formed against food proteins as well as therapeutic proteins.

### 1. Introduction

Human serum contains immunoglobulin G (IgG), directed against various dietary antigens [1,2]. Their clinical relevance in non-IgE mediated food allergy has been

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