

SPECIFIC IMMUNE RESPONSE IN HUMAN MILK TO ORAL IMMUNIZATION WITH FOOD PROTEINS*

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Human milk contains antibodies against a wide variety of microorganisms and their products.^{3,4} These antibodies are induced by antigenic challenge at the intestinal level, where lymphocytes programmed to secrete IgA are primed, and once committed, migrate to and home in the mammary gland, where they release specific IgA antibodies.³ Specific antibodies against food components that have also been found in human milk¹ may prevent the development of allergies in the breast-fed infant by inhibiting the absorption of undegraded molecules by the immature intestine.⁵ Goldblum² has reported that intestinal antigenic challenge with microorganisms results in the appearance of cells in human milk that release specific IgA, in the absence of a rise in the titer of antibodies.

With the purpose of determining if oral immunization with food proteins induces an immune response in human milk in addition to the time and magnitude of such response, six lactating women from Guatemala (mean age 25.5 years) were immunized orally with a protein extract of *Vigna sinensis* (cowpea). Starting on the fifth day post partum, and for five consecutive days, each mother received 2 g of protein in gelatin capsules. Two unimmunized mothers (29 and 27 years old) were used as controls.

Milk samples were obtained daily from the fifth to the ninth day postpartum and on days 11, 18, 25, and 33. Specific antibodies were determined by means of the enzyme-linked immunosorbent assay (ELISA), using the same protein preparation as antigen to coat the microplates. The samples were tested at dilutions of 1:20, 1:40, 1:80, 1:160, and 1:320, and the bound antibody was detected with alkaline, phosphatase-labeled swine antihuman IgA (Orion Diagnostica, Helsinki, Finland).

Five of the six women, orally immunized, showed no anti-cowpea antibody (<1:20) in their milk at the beginning of the study; four of them produced specific IgA antibodies between the 7th and 21st day; one mother did not have a measurable response. In the only subject with high anti-cowpea IgA antibodies before the immunization, they decreased to undetectable levels for two weeks and then rose again. The two mothers who did not receive cowpea protein remained negative throughout the study. If milk antibodies directed against food components play a role in the prevention of food allergies among children, it is possible to induce the production of such antibodies by immunization of lactating women.

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