Immunoglobulin E (IgE) antibodies from sera of peanut-allergic individuals are known to bind specifically to major peanut allergens, Ara h 1 and Ara h 2. The objective of this study was to determine the efficiency of magnetic beads (Dynabeads) attached with IgE antibodies in the removal of major peanut allergens from peanut extracts. Anti-human IgE antibodies were attached to magnetic beads by incubating Protein G-Dynabeads with goat anti-human IgE antibodies. The resultant anti-IgE-beads were incubated, respectively, with two sera (containing IgE antibodies) of peanut-allergic individuals. This process produced the IgE-Dynabeads which were further incubated with a peanut extract containing major peanut allergens. Allergens that bound to the IgE-beads were retrieved, using 0.1 M glycine hydrochloride, pH 2.5. The retrieved allergens and beads-treated extracts were analyzed by SDS-PAGE and Western blots. Results showed that the majority of major peanut allergens remained in the treated extract, and only small amounts of the allergens, especially Ara h 1, bound to the beads. It was concluded that while the IgE-Dynabeads bound major peanut allergens, the system was not efficient enough to remove peanut allergens to produce a less allergenic peanut extract. Further optimization of the IgE-bead system is needed.