מרץ, 2019

## **Israeli Medical Abstracts Repository (IMAR)**

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<u>Title:</u> The interplay between milk and the gut microbiome in IgE-CMA patients in the context of oral immunotherapy

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<u>Background:</u> It is increasingly being recognized that the enteric organisms that live in the gut (termed gut microbiota) have a profound influence on the metabolism and immune system of their host, and are themselves highly influenced in turn by the host's diet. Oral immunotherapy (OIT) is a novel therapeutic regimen which desensitizes food-allergic individuals by slowly exposing them to increasing amounts of allergen. Thus, OIT, for treatment of milk allergy provides a unique opportunity to study the contribution of ingested milk to the host microbiota and how it modulates the immune system leading to allergic desensitization.

<u>Research Hypothesis:</u> Consumption of milk has an effect on the gut microbiota, which can be discerned in a IgE-mediated cow's milk allergy (IgE-CMA) context.

<u>Aim 1</u>: To compare the gut microbiota of IgE-CMA patients to those of patients with other IgE-mediated food allergies.

<u>Aim 2</u>:. To examine the effects of milk in a temporal fashion, on the gut microbiota, of CMA patients undergoing milk oral immunotherapy (OIT).

<u>Aim 3</u>: To explore the use of intra-patient microbiota changes associated with OIT (aim 2) as predictors for successful treatment, and for reaction frequency and severity during therapy.

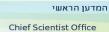
<u>Methods</u>: Fecal samples were collected from milk-allergic patients undergoing oral immunotherapy, and from patients allergic to other foods. DNA was extracted, and the 16SrRNA genes amplified and sequenced, facilitating the characterization of the gut microbiota.

<u>Results:</u> Distinct microbial signatures were noted for FA to different foods. SCFAs levels were significantly higher in the non-allergic compared to the FA groups. Among milk-allergic patients undergoing milk-OIT, the abundance and evenness of the taxa present were different among those who failed the desensitization program as compared to those successfully desensitized.

<u>Discussion:</u> The location and scope of the human gut microbiota uniquely situate it to exert influence on the progression and establishment, and potential for resolution of of food allergy.

<u>Conclusions:</u> Our results demonstrate a link between IgE-mediated FA and the composition and metabolic activity of the gut microbiota.

Key words (Up to 5): Microbiome; Food Allergy; Oral Immunotherapy





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## Publications associated with the project (PubMed Format):

- 1. Distinctive Gut Microbiota Signature in Persistent IgE-mediated Food Allergy Goldberg, MR Hadar Gershon, Appel M et al. Journal of Allergy and Clinical Immunology, Volume 143, Issue 2, AB189.
- 2. Goldberg MR, Mor H, Magid Neriya D, et al. Microbial signature in IgE-mediated food allergies. Genome Med. 2020 Oct 27;12(1):92. doi: 10.1186/s13073-020-00789-4. PMID: 33109272; PMCID: PMC7592384. https://doi.org/10.1186/s13073-020-00789-4