In the article on the basis of published data contained ideas about the clinical significance of the excess lactose in the diet. Lactose is a specific inhibitor of β-galactoside - galectin 9 (Gal-9) which regulates the intracellular metabolism (cell growth, inflammation, immune response, apoptosis). Galectin 9 - is a specific ligand for scavenger receptor cell apoptosis Tim-3 (T cell immunoglobulin domain and mucin 3), the regulator of glucose transport and urate, acidophilic granulocyte chemoattractant. Galectin 9 can communicate with more than 9 cell membrane receptors (CD366, CD137, CD44 molecules, PD-1, and some adhesion molecules), a interact with certain intracellular molecules. Approximately half of the total number of Gal-9 cells were located in the cytoplasm in the form soluble other half - is embedded in the cell membrane, and a small part of its molecules is found in the cell nucleus.

Activation of Tim-3 induces macrophages to inhibit T cells mediated auto- and alloimmune responses, contributing to the development of immunological tolerance. Gene Havcr2 (hepatitis A virus (HAV) cellular receptor 2, a cellular receptor for hepatitis A virus type 2), originally submitted as a receptor for recognition of hepatitis A virus, encodes a protein Tim-3. Tim-3 is not exclusively a membrane receptor, soluble forms of the Tim-3 may inhibit T-cell immune responses. Tim-3 is preferentially expressed on polarized CD4+ and CD8+ T-cells. Other immune cells such as T-regulatory cells (Treg), natural killer T (NKT), monocytes (CD14+), macrophages (CD11b+), the fat and dendritic cells may also express Tim-3. Recent studies have shown that some Tim-3+ CD4+ T cells to secrete IL-4, which is a marker of Th2-cells. The main receptor ligands Tim-3 is galectin-9, phosphatidylserine, HMGB1 (high-mobilitygroupbox 1).

Signaling pathway Gal-9 / Tim-3 performs a dual role: on the one hand induces apoptosis Tim-3-expressing effector cells, on the other - stimulates (2-3 days) of remaining secondary proliferation of Th1 cells (CD4+ FoxP3+), secreting CD25+, IFN-γ and IL-2. Therefore, Gal-9/Tim-3 regulates the immune response in acute and chronic inflammation, the development of autoimmune, allergic diseases, cancer, antitransplacental immunity.
Various scientific studies have provided evidence that Gal-9/Tim-3 signaling pathway may be an important pathogenic mechanism of chronic inflammatory diseases such as inflammatory bowel disease, nonalcoholic fatty liver disease, allergy, autoimmune disease and multiple sclerosis.

Excessive lactose in the diet may play a key role in the development of inflammatory and allergic processes in children. Particular influence of lactose contained in the diet, manifested in lactase deficiency. It was found that the severity of clinical symptoms depends on many factors: the amount of lactase, lactose combination use with other products, residual lactase activity, the ability of the colonic flora to the fermentation of lactose, individual sensitivity to the products of the fermentation of lactose.

Lactose exerts proinflammatory action competitively inhibit Gal-9, which by binding to the TIM-3 promotes the proliferation of Treg-cells, and suppress Th1, Th17-associated response. Lactose inhibiting Gal-9, also stimulates the development of allergic inflammation. In this regard, the use of preparations of exogenous lactase derived from Aspergillus orizae (AOL), can become a method prevents the development of inflammatory allergic diseases.