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**N-3, N-6 polyunsaturated fatty acids effect on the local anaphylactic response and intestinal integrity in a murine model of allergy**

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This study was carried out in order to investigate a possible preventive n-3 and n-6 PUFA effect against alterations due to immunization with β-lactoglobulin (β-Lg) in Balb/c mice. Four to five weeks old female Balb/c were divided into 3 groups (n=9 each). Mice were supplemented by gavage at a dose of 0.6% V/W for 15 consecutive days with either: 1) fish oil, rich in PUFA n-3, 2) corn oil, rich in PUFA n-6 and slight amount of PUFA n-3 or 3) a solution of PBS 1/10 as the control group. Mice of all groups were then immunized with intraperitoneal injections of 10 µg β-Lg absorbed onto 2 mg of Al(OH)₃. At the end of the experimentation, mice were killed and jejunums were removed for histological study and local anaphylactic study in Ussing chamber by the measurement of the electrophysiological parameters: short current circuit Isc (µA/cm²) and tissue conductance G (mmho/cm²). In Ussing chamber stimulation with β-Lg of jejunal fragments of the control group induced an increase in the Isc and G values (ΔIsc =17.40±2.39µA/cm², ΔG=6.41±1.67mmho/cm²). This increase is very significantly diminished after n-3 PUFA supplementation (ΔIsc = 7.94 ± 1.46 µA/cm², ΔG = 1.81 ± 0.62 mmho/cm² p<0.01). A non significant decrease of the Isc and G values (ΔIsc =10,73 ± 1.55 µA/cm², ΔG = 3.65 ± 0.62 mmho/cm²) was observed in the group supplemented with n-6 PUFA compared to the control group. The altered intestinal architecture observed in the control group was improved in the groups supplemented with both PUFA n-3 and n-6. The beneficial effect exerted by (n-3, n-6) PUFA was evidenced by a very significant increase (p< 0.01) of the villis length. Local intestinal anaphylactic response and intestinal damages are some of IgE mediated food allergy symptoms. Although contradictory, studies showed a decrease in sera IgE levels after supplementation by fish oil (n-3) or sunflower oil (n-6). In our experiment, n-3 PUFA seems to reduce the intestinal anaphylactic response and both n-3 and n-6 PUFA improved the intestinal architecture. The mechanism by which these PUFA exert their effect cannot be explained by this study and need to be further investigated. PUFA supplementation especially n-3 PUFA decreases considerably some of the damages resulting from sensitization with β-Lg in Balb/c mice and could be considered as a preventive strategy against allergy to cow’s milk proteins.