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Evaluation of neopterin and ALCAT test in patients with food intolerance

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Background: Specific foods and food additives can induce adverse gastrointestinal (GI) and cutaneous reactions, including food allergies that involve an abnormal immunologic reaction to food proteins or food intolerance which is not pathogenetically immune-mediated. Neopterin is synthesized by human monocyte-derived macrophages upon stimulation with interferon-gamma (IFN-gamma). Measurement of neopterin concentrations is useful for monitoring cell-mediated immune activation as there is a positive direct relationship between neopterin levels and severity of immune-mediated disorders. The aim of this study was to evaluate the neopterin serum levels in a group of patients with food intolerance.

Methods: A group of forty-six patients (40 females, 6 males, median age 33 years) affected by cutaneous disease (27%) or GI symptoms (73%) consequent to food ingestion were tested by ALCAT and neopterin serum levels were measured. The ALCAT test utilizes electronic haematology instrumentation and computerized data analysis to measure volumetric shifts in peripheral blood cells following incubation with food antigens. Results are expressed in terms of percent change for cell volume and number. The degree of reactivity was determined by comparing a baseline distribution curve (of WBC) against the distribution curve generated by the analysis of each test agent/blood sample, and calculating the absolute differences between the curves and the standard deviation (SD).

Any reactivity under 2 SD was considered non-reactive (negative) and these foods are allowed in the diet. The Neopterin-MW EIA kit (DRG Instruments GmbH) employed an enzyme immunoassay technique to measure neopterin in a serum sample and was performed according to the Manufacturer's Instructions and expressed as ng/mL. Neopterin values were reported as medians with first and third quartiles (interquartile range). ALCAT test data were described as a percentage of non-reactive foodstuffs. Correlation between neopterin serum levels and percentage of non-reactive food was evaluated by means of the Spearman's correlation coefficient (r).

Results: The neopterin median value was 2 ng/mL (25th-75th: 1.50-2.25 ng/mL). There was a significant positive relationship between neopterin serum levels and percentage of non-reactive foodstuffs ($p=0.05$, $r=0.302$).

Conclusion: This preliminary study confirms that food intolerance is not provoked by immunological mechanisms.