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Could we diagnose childhood asthma by LIBS technique?

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Background: Asthma affects children related to trace elements. Our aim was to investigate the levels of trace elements using Laser-Induced Breakdown Spectroscopy (LIBS).

Patients and methods: The study included 120 children aged 4–12 years from both sexes. They were divided into three groups: Group 1 controlled asthma, Group 2 uncontrolled asthma and Group 3 normal control. They were analyzed for serum levels of total IgE, eosinophil count and trace metals (Zn, Cu, Pb, Mg and Fe) by using LIBS.

Results: There was significant decrease in serum levels of Zn, Mg and Fe in children with asthma than in normal children. There was a significant decrease in uncontrolled asthmatic children than in controlled asthmatic children. But the Cu and Pb concentration in children with asthma was significantly higher than that in normal children and there was a significant increase in uncontrolled asthmatic children than in controlled asthmatic children.

Conclusion: Asthma is a common pediatric disease that is related to deficiency of Fe, Zn and Mg and occurs with increased Pb and Cu. LIBS is a safe and rapid technique that helps in detecting asthma.

Keywords: Bronchial asthma, Laser LIBS, Children.

Biography

Jehan Alsharnoubi is an Associate professor in Department of Pediatrics, Cairo University.

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