

Hair cortisol measurements as a diagnostic tool for chronic stress in children and its relation to children's body composition

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This abstract describes the core research of the author's PhD project that started in October 2009 (Prof. Dr. De Henauw S)

Background: Given the global increase in overweight and obesity among children, it is important to examine the influence of chronic stress on the etiology of obesity in this target group. Therefore the main objective of this project is to examine the practical feasibility and validity of the use of human scalp hair as a new diagnostic tool for chronic psychosocial stress in children via quantitative analyses of cortisol present in scalp hair. The relationships between hair-cortisol, saliva-cortisol, blood-cortisol, self-reported psychosocial stress, body composition, physical activity and nutrition will be analyzed.

Methods: 222 Belgian girls (6 to 10 years old) participated in this PhD research which is embedded in the 'IDEFICS'-project (www.idefics.eu). Next to anthropometric measurements and the administration of child-specific stress questionnaires (CLES-C), biological samples were taken. A minimum length of hair was sampled from the vertex posterior region of the head (the 6cm closest to the scalp is representative for the last 6 months). Quantitative analyses of cortisol are performed with the Liquid Chromatography – tandem Mass Spectroscopy technique and are currently ongoing. In a next step, the relationship between hair-cortisol, self-reported psychosocial stress and saliva- and blood-cortisol will be investigated, as well as the relation between experienced stress levels and body composition measurements.

Results and conclusion: The described project, more specifically the hair-cortisol analyzes are currently ongoing. Results are expected to be available in September 2011.

Acknowledgements: research related to this abstract was funded by the Research Foundation Flanders (FWO).

Keywords: psychosocial stress, child, hair, cortisol, measurement