TRACE ELEMENTS

NEWS UPDATES

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Hair Trace Elements and Pregnancy

The objective of this study was to determine the impact of lifestyle factors on age-related differences in hair trace elements content in pregnant women who were in their third trimester. It is known that trace elements have a significant role in regulation of human reproduction. Results revealed that older pregnant women had lower hair zinc, vanadium and cadmium content and higher boron compared to younger women. Their data indicates that lifestyle factors has an influence on age-related changes in hair trace elements during pregnancy that may impact the outcome of pregnancy. *Skalny, AV et al. The impact of lifestyle factors on age-related differences in hair trace element content in pregnant women in the third trimester. Acta Sci Pol Techn Aliment. 17, 1, 2018.*

Comment: Nutritional assessment is important and beneficial prior to, during and following pregnancy. HTMA can be used to provide targeted nutrition for the need of the mother as well as offspring. This is illustrated very well in the following study below.

Hair Mineral Analysis to assess Nutritional and Toxic Metal Status in Women and Their Children After In-Vitro Fertilization (IVF)

Hair mineral analysis was conducted on samples obtained from fifty women with IVF pregnancy and over one hundred controls who experienced spontaneous pregnancy. Hair samples were also analyzed from their nine month old children in both groups. Comparisons revealed that women with IVF pregnancy had significantly elevated hair arsenic, mercury, lithium, sodium and potassium and reduced iron and zinc levels. The children of the IVF group had low hair levels of chromium, iron, magnesium and higher mercury and molybdenum compared to the control group. Hair mineral levels were associated with infertility and pregnancy complications. The authors conclude that the results suggest the need for preconception monitoring and correction of essential elements as well as toxic metals in or to improve the course of pregnancy and child development. *Akainy, AV, et al. Toxicological and nutritional status of trace elements in hair of women with in vitro fertilization (IVF) pregnancy and their 9-months-old children. Reprod. Toxicol. 11,81, 2018.*

Hair Zinc in Women with Androgenic Hair Loss

Female androgenetic alopecia is a genetic condition but minerals may play a role in in the condition. A case control study was conducted to compare the serum, hair zinc and iron in affected women compared to a non-affected group. Results found that serum and hair zinc and iron levels were markedly lower in women experiencing hair loss compared to the control group. *Dhaher SA, et al. Estimation of Zinc and Iron in the Serum and Hair of Women with Androgenetic Alopecia: Case-Control Study. Indian J Dermatol. 63,5, 2018.*

Hair Zinc and ADHD

Hair mineral profiles were compared between health children and those diagnosed as having attention deficit and hyperactivity. Copper to zinc and phosphorus to zinc ratios were found to be significantly lower in affected children than controls. Apparently elevated higher hair zinc levels were correlated with more symptoms of inattention, hyperactivity and total ADHD symptoms. *Tippairote, T, et al. Hair Zinc and Severity of Symptoms Are increased in Children with Attention Deficit and Hyperactivity Disorder: a Hair Multi-element Profile Study. Biol. Trace Elem Res. 179,2, 2017.*

Mineral Content of Hair and Teeth Reveal Environmental Pollution

An epidemiological survey was performed in environmental areas of pollution and non-polluted areas of Tbilisi. The study included five hundred children. They found the prevalence of dental caries was higher in children living in polluted regions than those living in less polluted regions. Hair and dental tests showed higher levels of lead, mercury and tin in tissues obtained from groups living in polluted areas. Therefore, hair and dental material can be used as indicators of environmental pollution. *Shishniashvili, TE, et al. Primary Teeth and Hair as Indicators of Environmental Pollution.J. Clin. Pediatr. Dent. 40,2, 2016.*

Hair Selenium in Children with Cancer

Low serum selenium has been found in pediatric and adult patients with cancers. Since hair selenium concentrations has been reported in adults with cancer this study was implemented to determine the hair selenium status in children with newly diagnosed lymphoid malignancies and the relation between malnutrition and selenium deficiency. The study included thirty patients with leukemia, and lymphoma and twenty five healthy controls. The hair selenium levels were found to be significantly lower in the cancer group. In conclusion, it was found that the hair selenium levels of children with leukemia and lymphoma, particularly in those that were malnourished were low compared to the healthy group. *Ozgen, IT, et al. Hair Selenium status in children with leukemia and lymphoma. J. Pediatr Hematol Oncol. 29,8, 2007.*

Hair Selenium and Mercury levels in children with Night Blindness

Night blindness in children have multiple factors but in particular attention should be aimed toward childhood nutritional deficiencies. Nutritional deficiencies can result in both physiological and pathological process which in turn can influence biological composition. This study design compared the levels of selenium and mercury in the hair, blood and urine of children with night blindness including both genders in ages 3 to 7 and 8 to 12 years with age and sex matched control group of children without night blindness. Results found the concentration of selenium was lower in scalp hair and blood samples of male and female children with night blindness. Mercury was higher in hair, blood and urine compared to controls. The authors concluded that the data obtained from this study can provide guidance to clinicians and other professionals investigating deficiency of essential trace elements and excess toxic elements in children with night blindness. *Afridi, HI, et al. Assessment of selenium and mercury in biological samples of normal and night blindness children of age groups (3-7) and (8-12). Environ. Monit. Assess. 187,3, 2015*.