

FLUORIDE EFFECTS ON OXIDATIVE STRESS AND TRACE METALS IN CHILDREN WITH OBESITY

Anurag Tomar,^{1,2,*} Dushyant Singh Chauhan,^{1,3} Vivek Pratap Singh,^{1,3} Sandeep Tripathi^{1,3}
Jaipur, India

SUMMARY: The presence of higher levels of fluoride (F) in drinking water (F>1.5ppm) may result in serious health problems for obese children. In the state of Rajasthan, almost all districts have high fluoride in their drinking/ ground water sources (up to 18.0 ppm) and about 11 million of the population are at risk. The aim of the present study was to evaluate the effect of fluoride in child obesity in high endemic fluorosis areas. Twenty-seven children (n=27) from a high fluoride (F>2.5ppm) region and twenty-seven (n=27) obese children (disease control) from a control area, where the fluoride content was normal (F< 1.5ppm), were compared. After clinical examination, lipid profiles, oxidative stress parameters (lipid peroxide level [LPO], superoxide dismutase, catalase, glutathione peroxidase, glutathione reductase, and reduced glutathione content), and trace metals (Cu, Zn, Fe, and Se) were investigated in serum. The concentration of fluoride in serum was significantly correlated with the water concentration. Increased LPO levels, reduced antioxidant status, and reduced trace metals were found in the children in both the obese and fluoride-exposed obese groups. On the basis of the results it was concluded that fluoride enhances the severity of obesity and fluoride promotes oxidative stress in an obese paediatric population. Further in depth studies are required for the understanding of the pathophysiology of childhood obesity in those residing in an endemic fluorosis area.

Key words: Children; Fluoride; India; Obesity; Oxidative stress; Trace metals.

¹National Referral Centre for Fluoride Poisoning in India, ²Department of Paediatrics, Nims Medical College, ³Department of Biotechnology, Institute of Advance Science & Technology, Nims University, Shobha Nagar, Jaipur - 303121 India. *For correspondence: Dr Anurag Tomar, Director, Nims University, Jaipur; Director, National Referral Centre for Fluoride Poisoning in India; Professor Department of Paediatrics Nims Medical College, Nims University, Jaipur- 303121 India; Fax: +91-11-4385 0101, +91- 141 2605050; Phone No.: +91-9829061020; E-mail: dranuragt@gmail.com ,web: www.nimsuniversity.org