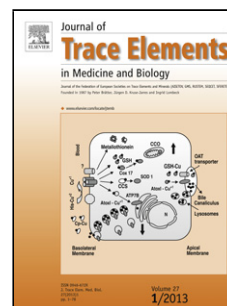


Accepted Manuscript

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PII: S0946-672X(18)30350-X
DOI: <https://doi.org/10.1016/j.jtemb.2018.07.004>
Reference: JTEMB 26184

To appear in:

Received date: 25-5-2018
Revised date: 22-6-2018
Accepted date: 9-7-2018

Please cite this article as: Sezgin BI, Onur ŞG, Menteş A, Okutan AE, Haznedaroğlu E, Vieira AR, Two-Fold Excess of Fluoride in the Drinking Water Has No Obvious Health Effects Other Than Dental Fluorosis, *Journal of Trace Elements in Medicine and Biology* (2018), <https://doi.org/10.1016/j.jtemb.2018.07.004>

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Two-Fold Excess of Fluoride in the Drinking Water Has No Obvious Health Effects Other Than Dental Fluorosis

Short title: Excess of Fluoride in the Water Has No Long-Term Health Effects

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Abstract

Background: There is concern that fluorides in the drinking water is hazardous to health.

Methods: We conducted an observational study in the village of Hanliyence (population 280), Turkey, which has 2.5 times higher than optimal levels of fluoride in the drinking water and evaluated all children 7 to 13 years of age (N=30). We collected information on dental decay, fluorosis, daily water consumption and diet, child history and her family history of cancer, cardiovascular risks/diseases, and asthma, and obtained a blood sample for extraction of genomic DNA. We genotyped ten single nucleotide polymorphisms in aquaporins.

Results. As expected, a high number of children were dental caries free (19 out of 30) and had fluorosis (25 out of 30). Family history of cancer, cardiovascular events, and asthma was not different from the expected figures based on Turkey. One variant just upstream of *AQP5* was associated with being fluorosis free. (G allele of *AQP5* rs296763, $p=6.0E^{-6}$).

Conclusions: Exposure to levels of fluoride twice as high than the optimum in the drinking water increases the prevalence of fluorosis, dramatically decreases dental caries, and does not increase the risk of cancer, cardiovascular events, and asthma.

Key Words: Fluorosis; Cardiovascular Disease; Cancer; Asthma; Dental Caries; Aquaporin

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