

THE RELATIONSHIP OF PARATHORMONE AND VITAMIN D RECEPTOR GENE POLYMORPHISM AND THE OCCURRENCE OF ENDEMIC FLUOROSIS FROM DRINKING BRICK TEA

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SUMMARY: The aims of the study were to explore the relationships between polymorphism of parathormone (PTH), located in the BstB1 (rs6254) site, and vitamin D receptor (VDR), located in the Fok1 (rs2228570) site, and the prevalence of endemic fluorosis from drinking brick tea (brick-tea type endemic fluorosis) between different ethnic groups. Screening for the presence of skeletal fluorosis and genotype and allele frequencies was carried out on the study population consisting of 1,869 subjects selected from the Golog Tibetan-inhabited areas in Qinghai province, the Mongolian-inhabited area in Hulunbuir city of the Inner Mongolia autonomous region, and the Kazak residential area in Xinjiang Altay region. The detection rate of skeletal fluorosis in the different ethnic groups was: Tibetans 43.55%, Kazaks 32.88%, Mongolians 21.90%, Han people 12.81%, and Russians 8.09%. Significant differences were found in the genotype and allele frequencies in the five ethnic groups ($p < 0.05$). Interactions were present between the rs6254 genetic polymorphisms and the rs2228570 genetic polymorphisms. There were ethnic differences in the PTH gene BstB1 (rs6254) site and VDR gene Fok1 (rs2228570) site in the study population. Genetic polymorphism of the PTH gene BstB1 (rs6254) site was associated with the presence of brick-tea type endemic fluorosis in the Tibetans and Kazaks. Genetic polymorphism of the VDR gene Fok1(rs2228570) site was associated with the brick-tea type endemic fluorosis in the Mongolians. The ancestral allele G and mutant allele C were the risk alleles for the brick-tea type endemic fluorosis. There were interactions between the rs6254 and rs2228570 genetic polymorphisms and age, nationality, profession, and urinary fluoride concentrations in the brick-tea type endemic fluorosis. Thus, we found that interactions occurred between the presence of rs6254 and rs2228570 genetic polymorphisms and the occurrence of endemic skeletal fluorosis from drinking brick tea.

Key words: Brick-tea type endemic fluorosis; Genetic polymorphism; PTH; VDR.

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