MAJOR AND TRACE ELEMENTS COMPOSITION OF THE URINARY STONES, KHUZESTAN PROVINCE, IRAN

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Due to increasing of urinary stones in Khuzestan province (southwest of Iran), this study is carried out to determine the chemical composition of urinary stones in this area. In this way 10 samples from main hospitals of the province were collected for mineralogical and geochemical analysis. Geochemical data using XRF show that CaO, MgO and P_2O_5 have the most distribution in compare of other major oxides. The most important elements in urinary stones are: Zr=135.5, Cu= 33.4, Zn= 47.4, Sr= 174.6, Cl= 558.6. The distribution of these elements is very low compared with the results of the studies carried out in other parts of the Middle East such as Jordon. Regarding the presence of Mg in Phosphorate minerals (such as Niahite and Struvite), positive correlation between MgO and P_2O_5 can be result of high tendency of Mg in participating in the Phosphorate phase. The negative correlation between P_2O_5 and CaO is also significant. It goes that each of the phases of P_2O_5 and CaO usually exist in the phosphorate and calcic minerals and are hardly found together in a high amount. The positive correlation between P_2O_5 and Sr is also significant. Other elements show no significant correlation with other major oxides. The high amount of Cu and Zr in uric acids and the positive correlation between these two is also significant. The high amount of Zr in uric acid minerals, due to the immobility of this element, and high value of Zr in the environment (food and water). But With attention to the concentration of copper in uric acid minerals (formation in PH<6) and the positive correlation between Cu and LOI ((Loss On Ignition), it is very likely that the copper sediment is resulted from the Presence of Organic compounds such as C (formation of CO_3). Finally, this study conclude that distribution of elements in the urinary stones is not just due to geochemical factors, but, according to specific environmental, mineralogical, and biological conditions.

Keywords: urinary stones, Khuzestan, Iran