

Abstract

This study aims to investigate the mineral composition of the salt on the fact whether unrefined salt reserves are safe for human consumption. Four different samples were randomly collected to analyze its moisture content, NaCl purity, and chemical parameters including Na^+ , Mg^{++} , K^+ , Ca^{++} , and SO_4 . In addition to it, heavy metal concentration (Pb, Cd, Cr, Ni, Cu) was examined by the help of atomic absorption spectroscopy. Moreover, environmental purification of salt was carried out to get high grade(99%) salt. The percentage of moisture content ranged from 0.06, 0.07, 0.09, and 0.05% respectively. NaCl purity was determined at a mean value of 95.28% in raw salt sample and reaches to 99.59% after secondary treatment. The concentration of chemical parameters in raw salt sample was comparatively higher than in salt after its secondary treatment. The concentration of Na^+ , Mg^{++} , K^+ , Ca^{++} , and SO_4 in raw sample was detected at mean value of 36.23, 0.58, 0.34, 0.31, and 0.32% respectively. However, their concentration after secondary treatment decreased except for SO_4 with 39.26, 0.05, 0.06, 0.02 and 0.46% respectively. Similarly, the concentration of trace metals was found to be in the range of 0.09 mg/kg of Pb, 0 mg/kg of Cd, 0.39 mg/kg of Cr, 0.69 mg/kg of Ni, and 0.055 mg/kg of Cu. Whereas its concentration was significantly decreased after secondary treatment having 0.004, 0, 0.006, 0.020, and 0.002 mg/kg respectively of above metals. All these values comes under the maximum consumption limit set by the Codex Alimentarius Commission (CAC) and WHO.

Keywords: NaCl Purity; Chemical Composition; Heavy Metal Analysis; Rock Salt Impurities; Salt Purification