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QUANTITATIVE ASSESMENT OF GROUND WATER AS A MEDIA FOR MINERAL EXPLORATION IN ARID AND SEMI-ARID REGION .

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ABSTRACT

The chemical analysis of ground water for major cations and anions of Padru, Mithura, Loharwa and Bhedana villages of arid and semiarid region of Barmer district of Rajasthan, shows that the water is saline and potassium and nitrate are comparatively in higher proportions. Through the water is slightly to moderately saline in nature, but with the presence of high potassium and nitrate content, the water can be profitably utilized for growing salt tolerant crops.

On working out the preferential salt formation, it is revealed that the nitrate is associated only with potassium in first three cases. Whereas in the fourth sample it is in association both with sodium and potassium in the ratio of $\text{NaNO}_3 : \text{KNO}_3$ is 1:1.42. Under controlled condition of evaporation economical recovery of potassium nitrate appears to be feasible from ground water.

The area is predominantly represented by older alluvium, comprising of sand, gravel, clay, kankar, pebbles etc. which is one of the units of unconsolidated sedimentary deposit laid down by water and wind agencies. Occurrence of high content of

Potassium and nitrates remain unexplained in such hydrogeological units and possibilities of pocket type evaporate deposits is reflected in depth: may be in shallow strip. The chemical analysis results of ground water may be utilized as a potential tool for exploring the area to quantify the hidden evaporate deposits for economical recovery of potassium nitrate as an import substitute.

