



## DISCRIMINANT ANALYSIS (DA) FOR SURFACE WATER QUALITY ASSESSMENT

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### ABSTRACT

This study evaluated the quality of surface drinking water using ten hydro-chemical variables at three stations on the shatt al arab river. A water quality index (wqi) was established, with values ranging from poor to unsuitable for the three stations. Statistical data revealed that all parameters at st1 and st3 were outside the standard limits. Furthermore,  $na^+ > ca^{+2} > mg^{+2} > k^+$  were found for all three stations. Pumping specific amounts of water from the al-badaa canal for specific periods of time improved water quality, but it remained unfit for human consumption. The variables primarily responsible for spatial variation were identified using a discriminant analysis (da) approach. Sulfate, magnesium, calcium, and alkalinity were found to be the most significant characteristics that characterized different locations and contributed to spatial variations in surface water quality. The results of this study provide decision makers with useful information to address the important issue of water quality management and protection.

### KEYWORDS

Discriminant analysis (da), hydro-chemical variables, pollutants.

