



*Int. J. New. Chem.*, 2020, Vol. 7, Issue 1, pp. 137-149.

## International Journal of New Chemistry

Published online April 2020 in <http://www.ijnc.ir/>.  
Open Access



Print ISSN: 2645-7236

Online ISSN: 2383-188x

### Original Research Article

# Spectrophotometric Study of Complex Formations between Alprazolam and Some Transition Metal Ions in Non Aqueous Solution

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*Received: 2019-08-08*

*Accepted: 2020-02-10*

*Published: 2020-01-04*

## ABSTRACT

In this study, the complexation reaction between Alprazolam (ALP) and metal ions ( $Zn^{2+}$ ,  $Ni^{2+}$ ,  $Cu^{2+}$  and  $Co^{2+}$ ) was investigated by using spectrophotometry in ethanol solvent. The stoichiometry of  $M^{+}/ALP$  complexes was calculated by applying the Job, molar ratio and Continuous Changes methods and the relevant diagrams were plotted for each metal ions in each method. The results show that the obtained complexes are 1:3. In the Continuous Changes method a defeat was observed at molar fraction of 0.66 for all complexes, which confirms complexes with 1:3 mole ratio. The formation constants of complexes were determined by using nonlinear least square method (KINFIT software) and it was concluded that the stability of complexes is varied in the order  $Cu^{2+} > Co^{2+} > Ni^{2+} > Zn^{2+}$ . Therefore, Cu is the strongest and Zn formed with Alprazolam ligand is the weakest complex.

**Keywords:** Spectrophotometric, Alprazolam, Metal ions, Stability, Complexation Reaction.