

## Spectrophotometric determination of Molybdenum in pharmaceutical samples and blood plasma after cloud point extraction

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**Background and Aims:** Molybdenum is an element that is present in very small amounts in the body. It is involved in many important biological processes, possibly including development of the nervous system, waste processing in the kidneys, and energy production in cells. Molybdenum is in access as sodium molybdate or ammonium molybdate in capsule form, usually combined with other nutrients.

**Methods:** in this work, an aliquot of the solution containing Mo(VI) ion and appropriate amounts of following solutions: concentrated HCl, Fe(III), KSCN, SnCl<sub>2</sub>, aliquat and Triton X-100 were transferred to a volumetric flask, The solution was taken up to the mark with distilled water and was transferred to a tube, then heated in a water bath for 35 min and after cooling in an ice-bath, the surfactant-rich phase became viscous and was retained at the bottom of the tube. The aqueous phase was easily decanted, and the remaining micellar phase was dissolved in acetone and transferred in to a quartz microcell. The absorbance of the solution was recorded at 470nm.

**Results:** The optimal conditions such as HCl, Fe(III), KSCN, SnCl<sub>2</sub>, aliquate, Triton X-100 concentrations and temperature were studied. The calibration curve was linear( $r=0.9990$ ) in the range of 0.8-125 ng.mL<sup>-1</sup> of molybdenum, and limit of detection was 0.6819. Relative standard deviations were 3.27% and 2.27% for 20 and 80 ng.mL<sup>-1</sup>, respectively. The method was successfully applied to determination of molybdenum in biological and pharmaceutical samples.

**Conclusions:** The proposed method give selective, very sensitive, simple, environmentally friendly and low-cost spectrophotometric procedure for analysis of Mo(VI) that can be applied to real samples. The surfactant has been used for preconcentration of Mo(VI), and thus toxic solvent extraction, has been avoided. This method is suitable for determining of Mo(VI) concentration in multi complete tablet and Addamel N and trace amounts of it in blood plasma samples.

**Keywords:** Spectrophotometric determination; Molybdenum(VI); Cloud point extraction; Preconcentration; Pharmaceutical samples