

**DEVELOPMENT AND VALIDATION OF ANALYTICAL
METHOD FOR ESTIMATION OF CALCIUM IN
HERBOMINERAL FORMULATION BY ATOMIC ABSORPTION
SPECTROPHOTOMETRY**

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ABSTRACT

Calcium determination is normally done by conventional titrimetric methods (Complexometric titration). In this study a simple, precise, accurate, rapid and sensitive method has been developed for Calcium (Ca) determination in Maxcal-C Tablet (Herbo-mineral formulation) and its raw materials by Atomic Absorption Spectrophotometer (AAS). For complete digestion of the sample, closed vessel wet digestion technique was used with 69% HNO₃ and 30% H₂O₂ (7:1) as digestive solvents. Analysis was performed on AAS (AA-6300) at λ_{\max} 422.7 nm. Calcium nitrate Ca(NO₃)₂ was used as standard for Calcium and linearity of the standard was excellent over concentration range of 0.5 to 20 $\mu\text{g mL}^{-1}$. The regression coefficient (r^2)

was obtained 0.999. For intraday and interday precision % RSD was obtained less than 0.48%-1.95% and 3.48%-5.01%, respectively which comply with the standard range for AAS. Recovery was achieved 93.24%, 99.73%, 101.75% for 3 levels (80%, 100%, 120%) spiking respectively, which complying with the standard range 75-125% for AAS. However, AAS method gives accurate and reproducible results and also overcome the colour and other ions interference which are common problems in case of titrimetric method. Results of both techniques (AAS method and titrimetric method) were compared, which showed good estimation by AAS. This study reveals that Calcium was totally extracted and estimated from Herbo-mineral formulation, by suitable digestion process and AAS instrument than conventional titrimetric technique.

Key words: AAS, Calcium, Bhasma, complexometric titration, Herbo-mineral.