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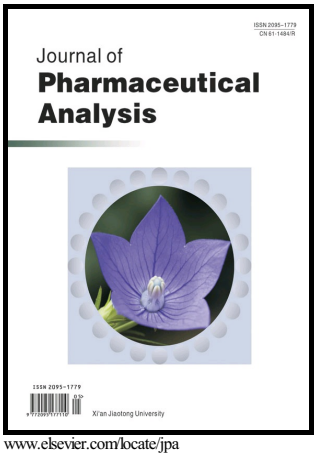

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Jing Ke, Hanfei Dou, Ximing Zhang, Dushimabararezi Serge Uhagaze, Xiali Ding, Yuming Dong

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Determination of pKa values of alendronate sodium in aqueous solution by piecewise linear regression based on acid-base potentiometric titration

Jing Ke[a] , Hanfei Dou[a] , Ximing Zhang[b], Dushimabararezi Serge Uhagaze[a], Xiali Ding[a], Yuming Dong[a,*]

[a]Institute of Pharmaceutical Analysis, School of Pharmacy, Lanzhou University, Lanzhou, Gansu 730000

[b]Key Laboratory of Gansu Province Chinese Medicine Preparation of Solid Dispersion, Gansu longshenrongfa Pharmaceutical Industry Co., Ltd. Lanzhou, Gansu 730000

[*]Corresponding author: dongym@lzu.edu.cn (Y.M. Dong)

Abstract

As a mono-sodium salt form of alendronic acid, alendronate sodium presents multi-level ionization for the dissociation of its four hydroxyl groups. The dissociation constants of alendronate sodium were determined in this work by studying the piecewise linear relationship between volume of titrant and pH value based on acid-base potentiometric titration reaction. The distribution curves of alendronate sodium were drawn according to the determined pKa values. There were 4 dissociation constants (pKa_1=2.43, pKa_2=7.55, pKa_3=10.80, pKa_4=11.99, respectively) of alendronate sodium, and 12 existing forms, of which 4 could be ignored, existing in different pH environments.