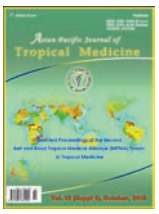

Asian Pacific Journal of Tropical Medicine

journal homepage: www.apjtm.org

doi: 10.4103/1995-7645.268165

Impact factor: 1.77

Adsorption kinetics and thermodynamics of phenylethanoid glycosides on macroporous resins in the leaves of *Callicarpa nudiflora*

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Objective: To investigate the adsorption kinetics and thermodynamic characteristics of phenylethanoid glycosides (PGs) in the leaves of *Callicarpa nudiflora* on macroporous resins and provide a reference for the separation and purification of these compounds.

Methods: With adsorption and desorption ratio as indexes, optimum types of macroporous resin for purification of PGs were selected from 8 kinds of macroporous resins by static adsorption and desorption tests, and then adsorption kinetics model and adsorption isotherm model of PGs were established to investigate their adsorption processes.

Results: SP-825 and SP-207 resin were selected and they have similar adsorption process for PGs. Both of them showed a fast adsorption in 0-60 min, a slow adsorption in 60-360 min, and an equilibrium adsorption stage after 360 min. Adsorption dynamic behavior was well described by quasi-second-order equation of both SP-825 and SP-207 macroporous resins, and adsorption rate was mainly controlled by liquid film diffusion and intraparticle diffusion. Equilibrium adsorption data fitted Langmuir and Freundlich isotherm equations well. Both of the two kinds of resins showed good adsorption properties for PGs, and the adsorption process belongs to favorable adsorption.

Conclusions: Both of the kinetic model and thermodynamic model can well describe the adsorption process of SP-825 and SP-207 macroporous resins and the two resins were regarded as excellent adsorption resins for the purification of PGs from the leaves of *Callicarpa nudiflora*.

Keywords: *Callicarpa nudiflora;* Phenylethanoid glycosides; Macroporous adsorption resin; Adsorption kinetics; Adsorption thermodynamics

Article history:
Received 18 September 2019
Revised 24 September 2019
Accepted 28 September 2019
Available online 7 October 2019

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How to cite this article: Wang Y, Zou MM. Adsorption kinetics and thermodynamics of phenylethanoid glycosides on macroporous resins in the leaves of *Callicarpa nudiflora*. Asian Pac J Trop Med 2019; 12 (Suppl 1): 15.