



Simultaneous Determination of Captopril, Hydrochlorothiazide and their Related Compounds in a Single Pharmaceutical Tablet Using Validated HPLC Method

Bianca S. HESS¹, João C. GASPARETTO¹, Marco A. CARDOSO² & Roberto PONTAROLO^{1*}

¹ *Universidade Federal do Paraná, 632 Lothário Meissner Avenue, 80210-170, Curitiba - PR, Brazil*

² *Pelé Pequeno Príncipe Research Institute, Av. Silva Jardim, 1632 - CEP 80250-060, Curitiba - PR, Brazil*

SUMMARY. A new sensitive, rapid and simple HPLC-DAD method has been developed and validated for simultaneous determination of captopril (CAP), hydrochlorothiazide (HCTZ) and their related compounds, captopril disulfide (CAD), chlorothiazide (CTZ), and 4-amino-6-chloro-1,3 benzenedisulfonamide (BTDZ), in tablets. The chromatographic separation was performed using 5 μm particles packed into a 4.6 mm i.d. phenyl column 150 mm in length that was maintained at 40 °C. A mobile phase consisted of a gradient of acetonitrile and phosphoric acid (0.067 %) eluted at 1.2 mL min⁻¹. The injection volume was 20 μL , and the detection wavelength was set at 220 nm. The validation procedures showed that the new method is selective and linear over a range of 0.5 to 400.0 $\mu\text{g/mL}$ for CAP, 0.3 to 14.4 $\mu\text{g/mL}$ for CAD, 0.05 to 100.0 $\mu\text{g/mL}$ for HCTZ, 0.08 to 1.2 $\mu\text{g/mL}$ for CTZ and 0.02 to 2.4 $\mu\text{g/mL}$ for BTDZ. Recoveries in the range of 98.82 to 101.31 % and precision <5 % for intra- and inter-day measurements were obtained. Additional experiments to test the robustness of the method indicated that changes in the pH can compromise the selectivity. The proposed method was successfully applied to real-world samples and can be considered a quick and cost effective alternative to current quality control methods for raw materials and tablets containing these drugs.

KEY WORDS: Captopril, Hydrochlorothiazide, HPLC, Combined dosage, Related compounds, Simultaneous determination.

* Author to whom correspondence should be addressed. *E-mail:* pontarolo@ufpr.br