ABSTRACT

VALIDATION METHOD OF UV SPECTROPHOTOMETRY AND TLC-DENSITOMETRY TO DETERMINE COLCHICINE IN TABLET

A research has been conducted to compare UV spectrophotometry and thin layer chromatography (TLC)-densitometry method to determine colchicine in tablet. The objective of this research is to validate the methods to fulfill the requirements of method validation for UV spectrophotometry and TLC-Densitometry. Selectivity, linearity, accuracy, and precision are the measured validation parameter in this research. Chloroform : aquadest (30:20) are the immiscible solvent used for extracting colchicine from tablet matrices. Selectivity was measured in UV spectrophotometry at 350 nm to analyze colchicine. In TLC-densitometry the selectivity was measured by applying colchicine into silica gel 60 F 254 with chloroform : aceton : diethylamine ( 5 :4 :1 ) mixture as the mobile phase. The spot scanned at 353 nm and its Rf value was 0.55. Linearity analysis with UV spectrophotometry using colchicine standard solution 8 to 20 ppm (r=0.9996, Vxo= 0.67 %) and analysis with TLC-densitometry using 200 to 1000 ppm (r=0.9984, Vxo= 6.54 %). Accuracy and precision analysis were done using 80%, 100%, and 120% of therapeutic concentration (500 µg). By UV spectrophotometry, the average recovery was 90.83% with RSD 3.16%, while TLC-densitometry had average recovery 86.11% with RSD 6.48%. Accuracy in both method meet the requirement (average recovery = 85% - 110%) but the TLC-densitometry was not fulfill the precision requirement (RSD ≤ 4 %). However, the percentage of colchicine recovery using UV spectrophotometry compared to the concentration in the label is
102.5% ± 3,40 %. This is not exceed the percentage labeled amount claimed, ( not less than 90 % and not more than 110 % USP XXXII )

Keyword: UV spectrophotometry, Thin layer chromatography-densitometry, method validation, colchicine tablet