

ABSTRACT

A simple, new and efficient reverse phase high performance liquid chromatography method was developed and validated for the separation of most popular ingredients in skin whitening creams. For RP-HPLC analysis a Hibar® C₁₈ 250 mm × 4.6 mm, 5µm column (Merck milipore, Carolina, USA) as the stationary phase with a mobile phase consisting mixture of acetonitrile, methanol and water (40:40:20) pH 7.00 at flow rate of 0.8 ml/min for 9 mins at room temperature. Detection was made performed at 254 nm and 280 nm using photo diode array detector. The method was validated in accordance with ICH guidelines with respect to linearity, accuracy, precision, specificity, limit of detection and quantification. The method result in excellent separation of skin whitening agents in cosmetic creams. The method is specific for salicylic acid, arbutin, cortisone, hydrocortisone, betamethasone valerate and betamethasone dipropionate. The calibration curve of skin whitening agents were linear with the regression analysis showed $r^2 > 0.999$. % RSD for inter and intraday precision were determined as 0.461 & 0.329 for salicylic acid, 0.427 & 0.317 for arbutin, 0.360 & 0.346 for cortisone, 0.336 & 0.350 for hydrocortisone, 0.463 & 0.339 for betamethasone valerate and 0.385 & 0.372 for betamethasone dipropionate, respectively. The % RSD results were satisfactory. LOD and LOQ were calculated as 104.4 & 316 for salicylic acid, 104.4 & 316.4 for arbutin, 104.4 & 316.3 for cortisone, 104.3 & 316.4 for hydrocortisone, 104.4 & 316.3 for betamethasone valerate and 104.4 & 316.4 for betamethasone dipropionate. The recovery of skin whitening agents were 97.18% for salicylic acid, 97.99% for arbutin, 98.30% cortisone, 97.63% for hydrocortisone, 98.65% for betamethasone valerate and 98.18% for betamethasone dipropionate, respectively. Skin whitening creams available in Pakistan contain 28% salicylic acid, 31% arbutin, 20% cortisone, 12% hydrocortisone, 5% betamethasone valerate and 4% betamethasone dipropionate.