

ABSTRACT

**METHOD VALIDATION FOR THE ASSAY OF
PHENOXYETHANOL, METHYL PARABEN, ETHYL
PARABEN, PROPYL PARABEN AND BUTYL PARABEN IN
SUNSCREEN LOTION BY HPLC**

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A high performance liquid chromatography (HPLC) method for the assay of phenoxyethanol, methyl paraben, ethyl paraben, propyl paraben and butyl paraben in sunscreen lotion was developed and validated. The use of a High Pure Silica RP-18 endcapped column (125 x 4) mm and acetonitrile: methanol: water were used as the mobile phase with gradient system and the composition at 0 min is (10 : 20 : 70); 15th min (0 : 80 : 20); 17th min (10 : 20 : 70) and 1 mL/min flow rate system enabled five compounds to be separated simultaneously in one analytical run. The diode array detector was set at 258.8 nm and column temperature was set at 30°C. The method was validated to demonstrate it's selectivity, linearity, accuracy, presicion, and robustness. The calibration curve showed good linearity for all five analytes. The correlation coefficients were in all cases are greater than 0,999. Linearity regression graphic showed linear response over the range of concentration used (between 40% and 160% for each analytes). The average %recovery value for phenoxyethanol (119.65 ppm – 222.12 ppm) is 97.95% - 104.1%, methyl paraben (28.36 ppm – 52.7 ppm) 97.88% - 102.73%, ethyl paraben (6.60 ppm – 12.27 ppm) 102.14% - 107,14%, propyl paraben (4.20 ppm – 7.83 ppm) 89.35% - 108.03%, and butyl paraben (9.33 ppm – 17.30 ppm) 90.16% - 104.90% and the precisions (RSD) were less than 2% for all analytes. This method was proved to be selective and robust over the column temperature changing. The proposed method was successfully applied for analysis of mixture preservatives in sunscreen lotion products.

Keywords: methyl paraben, ethyl paraben, propyl paraben, butyl paraben, phenoxyethanol, HPLC, validation for assay, sunscreen lotion