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Volume 47, Issue 3, 1 May 2017, Pages 275-285

Fast and simple gas chromatographic method for simultaneous estimation of camphor, menthol and methyl salicylate in analgesic ointment: application in stability study (Article)

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Abstract

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A simple, rapid and sensitive gas chromatographic (GC) method with flame ionization detector (FID) has been developed and validated for simultaneous estimation of camphor, menthol and methyl salicylate (MS). Camphor, menthol and MS were separated at about 2.753, 3.206 and 3.995 min respectively on a capillary column with helium (3.3 ml/min) as carrier gas within 11 min run time. Noninterference of any peak with the peaks of interest confirms the selectivity of method. Derived quantitation limits (QL) were 0.847, 0.684 and 6.507 µg/ml for camphor, menthol and MS respectively. The linear relationship ($R^2 > 0.999$) between analyte concentration vs detector response was established within a range of QL to 150% of label claim concentration for each analyte. Recovery of each analyte at 50, 100 and 150% of label claim concentration levels were obtained within 99.67–101.53% establishing high accuracy of the method. The method showed acceptable precision with low relative standard deviation or RSD (0.24–1.03%) between percent recoveries for each analyte. RSD for intermediate precision (inter day analysis, analyst variation) was less than 1%. The validated method was successfully applied for quantitative determination of camphor, menthol and MS in stability samples of an analgesic ointment produced by IKOP Sdn. Bhd., Malaysia. © 2017, The Korean Society of Pharmaceutical Sciences and Technology.

Author keywords

Camphor GC-FID Menthol Methyl salicylate Validation

ISSN: 20935552

Source Type: Journal

Original language: English

DOI: 10.1007/s40005-017-0305-0

Document Type: Article

Publisher: Springer Netherlands

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