

CHAPTER V

CONCLUSION

In our work, the analytical method using high performance liquid chromatography with mass spectrometry was applied to quantitate the amount of hydroquinone, retinoic acid and corticosteroids.

With the developed system, there were no interference of hydroquinone, retinoic acid and corticosteroids in the matrix blank. The fundamental parameters for the validation such as specificity, linearity and range, recovery, precision, limit of detection, limit of quantitation and measurement uncertainty were determined. The linearity and range determined as the r was 0.995. The data of repeatability and intermediate precision was in acceptable range. Therefore, there was a consistency of the analytical method used to determine the amount of hydroquinone, retinoic acid and corticosteroids within one day or different the days.

In conclusion, we succeeded in development of a method for simultaneous quantitative determination of hydroquinone, retinoic acid and corticosteroids. The HPLC-MS technique was presented which is capable of simultaneous quantifying hydroquinone, retinoic acid and corticosteroids in whitening products. A simple linearity gradient based on 0.1% formic acid in water and acetonitrile as mobile phase was sufficient to obtain a separation of the eight analytes, which were detected by HPLC-ESI-MS in positive ionization. The importance of this method is its usefulness in directly determining and differentiating betamethasone from dexamethasone without derivatization [69, 70, 71, 72]. The method is specific, sensitive and reliable so that the result is very useful in the litigation. The method can be easily applied by safety authorities in order to avoid fraudulent operations and thus look after consumers' health.

Comparing to other methods described in literature review, LC-MS/MS method developed was the most selective and sensitive method. Therefore, it should be selected for further study.

Further studies

This study provides fundamental knowledge that could lead to further structure/function relationship study of determination of hydroquinone, retinoic acid and corticosteroids. In the future, we planned to establish new strategies to detect all these compounds using triple-quadrupole LC-MS/MS in a single test. Moreover, this will be advantage by offering sensitivity, specificity, definitive mass identification and powerful technique, which could be very useful in our laboratory.