SPECTROPHOTOMETRIC METHOD FOR HYDROQUINONE DETERMINATION IN SKIN WHITENING PRODUCTS

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ABSTRACT

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Hydroquinone is belongs to phenolic aromatic organic compound with the chemical formula of $C_6H_4(OH)_2$. Hydroquinone is commonly used as skin whitening agent in cosmetic products. It has the ability to make the skin appear fairer. Hence, the amount of hydroquinone in cosmetic products must be analyzed. The presence of hydroquinone that exceeds the permitted level of 2 % in cosmetic products is toxic for human. Therefore, a sensitive, accurate, simple, rapid and low cost analytical method is required for the determination of hydroquinone. The spectrophotometric method has been proposed for the quantitative analysis of hydroquinone. The calibration curve was linear from 2 mg L^{-1} to 12 mg L^{-1} of hydroquinone with a regression coefficient (R^2) of 0.9999. The limit of detection (LOD) obtained was 0.25 mg L^{-1}. The precisions in terms of relative standard deviation (RSD) were 4.44 %, 2.22 % and 0.00 % for 2 mg L^{-1} hydroquinone in consecutive three days. Meanwhile, the RSD were 0.86 %, 2.52 % and 1.71 % for 5 mg L^{-1}. Lastly, for concentration of 8 mg L^{-1} the RSD were 0.00 %, 1.05 % and 0.53 %. The range of recovery achieved for 2 and 4 mg L^{-1} of hydroquinone standard solution in the skin whitening product were 99.18 % and 94.25 % respectively. The all tested skin whitening products contain hydroquinone below 2 % except for one product which is Collagen Plus (night cream) that slightly exceed the limit with 2.06 %. So, it can be concluded that this proposed method is accurate, simple, fast, low cost and has a potential to be an alternative method for routine analysis of hydroquinone in cosmetic samples.

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