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Determination of Tizanidine in Transdermal Formulation by UV Spectrometry and High Performance Liquid Chromatography

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***SUMMARY*. In current study UV and HPLC methods were developed for the quantitative estimation of tizanidine (TZD) in transdermal drug delivery patch. In order to improve the quantitative estimation, the sensitivity of the developed method was maximized by using suitable solvent system, specific wavelength of detection and precise chromatographic conditions. The regression equation obtained by UV method was found to be with absorbance = 2.88×10^2, concentration = 2.82×10^{-2} μg/mL while with HPLC method to be peak area = 3.6904×10^2, and concentration = 1.0342×10^3 ng/mL. The detection limit for UV method was found to be 0.44 μg/mL and for HPLC 20 ng/mL. For the estimation of tizanidine in transdermal patch the developed method was found to be highly accurate and precise. Analytical procedure validation was done according to the International Conference Harmonization guidelines. It was found that both methods were precise, accurate, and sensitive and could be applied directly to the transdermal formulation.**

RESUMEN. En el estudio actual, se desarrollaron los métodos UV y HPLC para la estimación cuantitativa de tizanidina (TZD) en parche de administración transdérmica de fármacos. Para mejorar la estimación cuantitativa, se maximizó la sensibilidad del método desarrollado mediante el uso de un sistema disolvente adecuado, longitud de onda de detección específica y condiciones cromatográficas precisas. La ecuación de regresión obtenida por el método UV mostró una absorbancia = $2{,}88 \times 10^2$, concentración = $2{,}82\ 10^{-2}$ μg/mL, mientras que con el método HPLC el área del pico fue = $3{,}6904 \times 10^2$, concentración = $1{,}0342 \times 10^3$ ng/mL. Se encontró que el límite de detección para el método UV era de 0,44 μg/mL y para HPLC de 20 ng/mL. Para la estimación de tizanidina en el parche transdérmico, el método desarrollado es altamente preciso y seguro. La validación del procedimiento analítico se realizó de acuerdo con las directrices de la Conferencia Internacional de Armonización. Se encontró que ambos métodos eran precisos, seguros y sensibles, y podían aplicarse directamente a la formulación transdérmica.

KEY WORDS: Tizanidine; High Performance Liquid Chromatography; Transdermal patch; UV spectrophotometer.

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