

Evaluation of Different Brands of Gentamicin Sulfate Available in Pakistan by Newly Developed Spectrophotometric Method

Madan L MAHESHWARI ¹, Ubed-Ur-Rehman MUGHAL ², Abdul H. MEMON ³, Narendar KUMAR ⁴, Hosh M. LASHARI ³, Akram KHATRI ⁵, Geeta KUMARI ⁵ & Saeed A LAKHO ^{1*}

¹ Department of Pharmaceutical Chemistry, ² Department of Pharmaceutics, ³ Department of Pharmacognosy, ⁴ Department of Pharmacy Practice, ⁵ Department of Pharmacology, Faculty of Pharmacy, University of Sindh, Jamshoro, Pakistan

SUMMARY. A fast, easy, and precise method using spectrophotometric analysis is reported for gentamicin sulfate. In this method gentamicin sulfate is reacted with vanillin to produce slight yellow colored Schiff's base. The formed colored product showed absorbance in visible region at a λ of 394 nm with molar absorptivity (ϵ) of $8.919 \times 10^3 \text{ L mole}^{-1} \text{ cm}^{-1}$. Different chemical parameters were optimized to get the best results. A linear relationship was observed between the absorbance and concentration of the derivative within range of 4-20 $\mu\text{g mL}^{-1}$. The developed method was applied successfully for analysis of GEN sulfate in commercially available brands in local market in different formulations *i.e.* injectables, creams and eye/ear drops. Interday and intraday reproducibility was observed as 0.145 and 0.148 with RSD values of 0.31% and 0.12%, respectively.

RESUMEN. Se informa sobre un método rápido, fácil y preciso que utiliza análisis espectrofotométrico para el sulfato de gentamicina. En este método, el sulfato de gentamicina se hace reaccionar con vainillina para producir una base de Schiff de color amarillo claro. El producto coloreado formado mostró absorbancia en la región visible a una λ de 394 nm con una absorptividad molar (ϵ) de $8.919 \times 10^3 \text{ L mol}^{-1} \text{ cm}^{-1}$. Se optimizaron diferentes parámetros químicos para obtener los mejores resultados. Se observó una relación lineal entre la absorbancia y la concentración del derivado dentro del rango de 4-20 $\mu\text{g mL}^{-1}$. El método desarrollado se aplicó con éxito para el análisis de sulfato GEN en marcas disponibles comercialmente en el mercado local en diferentes formulaciones, es decir, inyectables, cremas y gotas para ojos/oídos. La reproducibilidad interdiaria e intradiaria se observó en 0,145 y 0,148 con valores de RSD de 0,31% y 0,12%, respectivamente.

KEY WORDS: different brands, evaluation, gentamicin sulfate, new spectrophotometric method, Pakistan

* Author to whom correspondence should be addressed. *E-mail:* saeed.lakho@usindh.edu.pk