ORIGINAL RESEARCH

Visual Inspection and Spectrophotometric Analysis of Tetracycline Hydrochloride Capsules available in Benin City

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To cite this article: Aghayere GE and Umeozulu TB. Visual Inspection and Spectrophotometric Analysis of Tetracycline Hydrochloride Capsules available in Benin City. Journal of Basic and Social Pharmacy Research, 2025;3(4):1-9
ISSN: 2705-3245

ABSTRACT

Background: Tetracycline hydrochloride used clinically and in veterinary medicine is known to be susceptible to degradation due to poor manufacturing practices and storage conditions. This can result in substandard antibiotic which could worsen health condition, leads to treatment failure and increase antibiotic resistant bacteria.
Objective: This study aims to evaluate the quantity of tetracycline hydrochloride in different brands of tetracycline hydrochloride capsules available in pharmacies in Benin City.
Material and Methods: Ten brands of tetracycline hydrochloride capsules coded T1 – T10 were investigated using visual inspection tool provided by the International Pharmaceutical Federation (FIP) and Spectrophotometric assay method by Rahman and colleagues.
Results: The outcome of the visual inspection revealed that T1 and T5 had a score of 100%. The quantitative assay showed that T1, T3, T7 and T9 with percentage content of 103.17±0.85%, 96.51±0.92%, 96.51±0.94%, and 96.57±0.95% respectively were all within the 95% – 105% BP specification. While T2, T4, T5, T6, T8 and T10 with percentage content of 81.51%±0.98%, 128.18±0.77%, 79.84±1.01%, 83.17±0.09%, 144.84±0.67% and 93.17±0.91% respectively were not within specification. The colour of the powder content of T4, T5, T6, and T8 appear dark.
Conclusion: There was variability in quantity of tetracycline hydrochloride among the various brands investigated. Six out of ten of the brands assayed were substandard products, thus highlighting the need for urgent regulatory and manufacturing reforms to prevent therapeutic failure, increase in antibiotic-resistant bacteria and ensure safe use of medication.

Keywords: Tetracycline hydrochloride; Visual inspection tool; Spectrophotometric analysis; BP Specification