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PROGRESSES IN ENVIRONMENTAL ENGINEERING CONCERNING THE RETENTION OF TOXIC WASTE FROM NEW PHARMACEUTICAL FORMS WITH ANTI-FUNGAL ACTION AND THE PROTECTION OF WASTEWATER QUALITY

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Abstract

Researching and industrializing a new pharmaceutical form results in an impressive amount of waste due to the methods used. Despite numerous reports about the addition of pharmaceutical ingredients to the environment, the effect they have on the environment at the nanogram (ng) level remains largely unknown; thus, it has been proposed to retain toxic compounds using Dowex resins in biomucoadhesive tablets containing miconazole nitrate, an antifungal medication. This study demonstrates the reduction of water pollution by using pharmaceutical forms of miconazole nitrate anions; at the same time, the proposed method can also re-utilize the anti-fungal substances by recovering them from the ion-changing resins. The pollutant examined in the study was nitrate anions, and the resin was represented by DowexTMNSR-1. Once the pharmaceutical form was disaggregated in distilled water and the resulting solution was filtered through the Dowex resin, chemical test reports were created, and all the parameters had registered values below the allowable wastewater limits. Through the ionic exchange method in this study, up to 99.8% of the anion nitrate ended up as waste during the preparation of new pharmaceutical forms while the antifungal effect was retained. This anion nitrate percentage was confirmed through 10 different determinations of 309 biomucoadhesive miconazole nitrate tablets disaggregated into 1000 mL of distilled water.

Key words: biomucoadhesive tablets, Dowex resins, miconazole nitrate

Received: February, 2015; Revised final: June, 2015; Accepted: June, 2015

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