HPLC ANALYSIS FOR DETECTION OF ALBENDAZOLE, FEBANTEL AND LEVAMISOLE HYDROCHLORIDE AND THEIR PHOTO DEGRADATION PRODUCTS

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After certain pathways and reactions in human or animal body, various metabolites and sometimes unchanged parent compound are excreted through urine or feces. Entering the environment, pharmaceuticals and their metabolites are exposed to sunlight and other conditions which can cause their degradation. The identification of degradation products represents a major challenge to improve understanding of the environmental fate of pharmaceuticals. Analyses were performed on anthelmintics, veterinary drugs that are used to treat parasitic worms’ infections. Due to their use in great quantities in veterinary practice and agriculture anthelmintics have the potential to appear in surface waters.

The main goal in this study was to determine the parent compound and to find out whether it photo degrades and if so, to determine and identify the photo degradation products. Albendazole (ABZ), febantel (FEB) and levamisole hydrochloride (LEV HCl) were analyzed. Samples were exposed to UV light of 254 nm. Even though the UV light of 254 nm could not pervade to the Earth surface, irradiations were carried out at the given wavelength to determine as much photo degradation products as possible. The LC analyses of irradiated water samples were performed by Varian ProStar 500 HPLC system using ProStar 330 diode array detector (Walnut Creek, California, USA) on C18 modified column Synergi Fusion-RP (Phenomenex, USA). 150×2.0 mm, particle size 4 μm and gradient elution by binary mixture of solvents A (water with 0.01% formic acid) and B (acetone with 0.01% formic acid) as mobile phase. The results show that all three analyzed pharmaceuticals photo degrade to one or more products.

Keywords: anthelmintics, photo degradation products, HPLC analysis

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