

**FATE OF TESTOSTERONE IN MANURES FROM VARIOUS LIVESTOCK**

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**ABSTRACT:** During the last five decades, the consumption of hormones for human medicine and animal production has experienced steady growth. Veterinary pharmaceuticals are commonly used in animal production to increase weight gain, improve feed efficiency, increase milk production, manage reproductive processes, and for disease treatment and prevention. Veterinary pharmaceuticals, including steroid hormones, used in animal feeding operations may be released into the environment with animal wastes through overflow or leakage from storage structures or land application. Consequently, manure from these various animal production operations can be a source of endocrine disrupting compounds released into the environment. These endocrine disrupting compounds, such as 17 $\beta$ -estradiol, testosterone, and progesterone are of particular concern because of their potential resistance to degradation resulting in a possible accumulation in the environment. The fate and transport of steroid hormones depend on multiple factors; including chemical reactions (e.g. oxidation), photolysis and microbial degradation. One of the most important sources of steroid hormones to the environment is believed to be manures. Degradation and specifically transformation pathways of steroid hormones, such as testosterone, in manures have not been studied to a great extent. Consequently, the objectives of this study are to identify the potential impact of microbial activity on the fate of testosterone in manure from livestock. This presentation, will address the degradation kinetics and products of testosterone in the presence of various types of manures and *E. coli* (to eliminate matrix effects). Experiments were conducted using manures from cattle, poultry, and swine feeding operations. Aerobic batch experiments were set up by adding testosterone to the manures and *E. coli* culture in Erlenmeyer flasks and shaken over a period of 7 days. Samples were taken out periodically and analyzed for testosterone and potential degradation products using HPLC-DAD or HPLC-TOF-MS. We will discuss the results of this ongoing study and its potential environmental significance.

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