

## Microbial degradation of Roxarsone

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Roxarsone (4-hydroxy-3-nitro-benzene-2-sulfonic acid) is a FDA approved poultry feed additive commonly used since 1960's in the United States. It has the ability to act as a growth promoter for better feathering, preventing microbial infections and increasing egg production<sup>1</sup>. However excess of 90% of this additive is excreted unchanged and more than 1,100 tons are added to the waterways annually<sup>1</sup>. Interestingly precious little is known about the metabolism, environmental fate and impact of roxarsone. Results from ours and other laboratories indicate that roxarsone can be degraded by a variety of microbes. However the mechanism of degradation is not clearly understood. In order to gain the mechanistic insight we have developed analytical techniques that allowed the detection of different intermediates. The procedure involved high performance liquid chromatography (HPLC) coupled with optical detection and mass spectrometry. The separation of various phenylarsonic acids and the more toxic inorganic arsenic compounds was achieved by optimizing reverse phase chromatographic methods using a C18 column. Preliminary studies conducted with extracted chicken manure indicated that roxarsone is stable 24 hours and degrades rapidly to 3-amino-4-hydroxy phenylarsonic acid.