Fermentation of Thin and Whole Stillage With Sporobolomyces Roseus for the Production of β-Carotenes

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Goals:
- To optimize the fermentation of whole stillage and thin stillage with *Sporobolomyces roseus*.
- To perform a scale-up operation and generate sufficient quantities for feed processing trials
- Formulate and manufacture swine and poultry diets containing either fermented whole stillage or thin stillage.
- Conduct tests to determine shelf life of our product before and after its inclusion in finished feed.

Statement of Problem:
Over the past decade, dried distiller’s grains with solubles (DDGS) have become a staple in animal feed rations. This is in part due to the ethanol boom of the early 2000’s, but demand for a quality consistent feed ingredient has become a driving factor in the production of DDGS. Ethanol producers and consumers have discovered a large market for a once secondary product and in order for the ethanol industry to become sustainable, profits must be maximized through utilization of all products produced by the fermentation process and strict process controls to create a consistent product.

Our project will test procedures aimed at increasing the nutritional value of different ethanol by-product streams through a secondary fermentation process and perform feed processing and feed stability trials. Preliminary experiments performed at Bioprocessing and Industrial Value Added Program (BIVAP) is very encouraging.

During the course of this project, we hope to enhance the nutritional aspects of the whole stillage, most notably the amino acid contents and β-carotene, thus making this product more valuable for inclusion in swine and poultry diets. Fermentation of the thin stillage will be included into diets as a liquid feed additive and also a fat source. Experiments performed at laboratory scale have indicated increased amino acid and antioxidants profile of distiller’s grains. This promising project will significantly lower the amount of expensive synthetic amino acids that would need to be added for a nutritionally balanced diet.

Current Activities:
- Optimization of fermentation parameters
- Large scale manufacturing of fermented products
- Nutritional analysis of fermented products