OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Probiotics & Functional Foods

October 23-25, 2013 Holiday Inn Orlando International Airport, Orlando, FL, USA

Anti-oxidant-enriched fish meal production by microbial fermentation

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Carotenoids are vital feed supplements that can improve animal health and provide quality products for human consumption. The need for carotenoids, especially astaxanthin in salmon feed cannot be overemphasized and is responsible for imparting desirable coloration. The recommended dosages of carotenoids in aquaculture are 30-120 mg/kg of total carotenoids and astaxanthin additive to salmonid feed cannot exceed 80 mg/kg in finished feed. Usually synthetically produced astaxanthin is added to fish feed and natural carotenoids extracted from biological sources like algae, yeasts or shrimp waste are more expensive. Producing carotenoids directly on animal feed can not only reduce the cost of aquaculture feed but also can provide natural carotenoids. Accordingly, this study outlines the patented red yeast fermentation of fish meal to produce natural carotenoid-enriched aquaculture feed. Red yeasts *Phaffiarhodozyma* and *Sporobolomycesroseus* were used to produce carotenoids in monoculture and mixed culture fermentation of fish meal. The total carotenoid yield ranged from 175-489 mg/kg and astaxanthin yield was 89mg/kg fish meal. Since the carotenoid-enriched feed provides carotenoids in excess of the dietary dose, the feed can be used to make feed blends to provide optimal levels of nutrition. Compositional analyses of the feed and other beneficial attributes of the feed will be discussed.

Biography

Ananda K. Nanjundaswamy is an Assistant Professor with the School of Agriculture, Alcorn State University. He received his Ph.D. from the Department of Grain Science and Industry, Kansas State University. His postdoctoral research was carried out at the Department of Biology, Auburn University at Montgomery. He has over 15 years of academic and industry research in agriculture, bioprocessing, bioenergy, biopharmaceuticals and analytical chemistry. He has three granted and two filed U.S. patents and has authored over 12 original, peer-reviewed research articles. He serves as a reviewer for a dozen journals in agriculture, bioprocessing and biotechnology.

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