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Nutraceuticals from rice by-products

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Nutraceuticals from rice by-products



India is said to be the second largest producer of rice in the world and rice bran has a huge nutritional significance. A number of valuable products such as oryzanol, tocotrienols, tocopherols, lysolecithin, ferulic acid, phytic acid, inositol, and triacontanol can be produced from the residues generated during the refining of rice bran oil and other derivatives of rice. These products can fetch prices ranging between Rs5000 to Rs6000 per kg in the international market.

Sensing the huge opportunity in the area, Punjab-based AP Organics, initiated a project to utilize the benefits offered by the rice derivatives in early 2012. The support came in the form of funding from Biotechnology Industry Partnership Programme (BIPP) of the Department of Biotechnology (DBT).

The project currently has proposed two potential products, oryzanol concentrate and lysolecithin from the by-products of rice bran oil refining. While the indigenous technologies for the same are available through in-house research centers, research institutions and plant suppliers, the raw materials are readily available in the company's production facility.

The company's management believes that the production of such value-added products that promotes secondary agriculture. Oryzanol can be developed as a safe and effective nutraceutical to be used as an alternative or as an adjuvant treatment with statin drugs for cholesterol management. The rice bran lysolecithin is a potent source of phospholipids and consists mainly of phosphatidylcholine, phosphatidylethanolamine, phosphatidylinositol, and triglycerides. Lecithins have emulsifying property and improve the digestibility of fats and fat-soluble vitamins. This by-product of oil refining has a vast potential in the ruminant's diet to increase the energy density of their rations and to optimize the milk production. For oryzanol extract, the company utilized the technology from Central Food Technology Research Institute (CFTRI), Mysore and scaled up to production level and for lysolecithin, the scientists have worked very hard to develop its powdered, free flowing form.

According to Mr Giteshwar Kalia, R&D manager, AP Organics, "Our scientists are constantly working for developing new technologies for extraction of nutraceutical from rice bran oil by-products."

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Way forward

With tremendous market opportunities for the by-products generated, the company is keeping the fingers crossed on the final outcome. The R&D team has already prepared oryzanol concentrate, which can be further developed as supplement or functional food with price ranging from Rs150-200 for Indian market and Rs1200 for the US. At the same time, lysolecithin will add huge value to animal feed market, as it increases absorption of the nutrients already available in the feed, so it significantly improves the livestock health as well as increases milk production in animals. The company has already done studies in collaboration with National Dairy Reserach Institute (NDRI), Karnal.

Praising DBT's efforts, Mr Kalia mentioned, "We believe such a handholding by the government agencies is very important for the development and growth of agriculture.These partnerships promoted by DBT encourages any entrepreneur to take calculated risk in developing new technologies and products of national importance. This is a great step forward in making India scientifically and economically independent."