



Nu-RICE[®] Lecithin Replacer

Lecithin is widespread within the food industry. However, recent technology to genetically modify the source of commercial lecithin (soybeans) has placed grave concern on the consumer acceptability of soya lecithin. This is further complicated by an inability to segregate native soybeans from those genetically modified. To eliminate this concern, food processors are desperately looking for alternatives to lecithin from soybeans.

RIBUS, Inc. would like to present Nu-RICE as its alternative to soybean lecithin. Nu-RICE is a spray-dried, water extract of rice bran previously stabilized through a protease treatment. Several patents and patents pending cover the product and process worldwide. Nu-RICE is rich in glycolipids with the ability to bind water and oil, as well as the ability to entrain air not unlike lecithin. As such, Nu-RICE should be a candidate to replace lecithin in all but high temperature (frying) applications.

Nu-RICE is currently being used in various food products including but not limited to mayonnaise, peanut butters, icings, margarines, spreads, salad dressings, release agents, flavorings, and colors. RIBUS certifies that Nu-RICE does NOT contain genetically modified entities, has NOT been treated with organic solvents, 100% natural, and Kosher certified. Plus, use of Nu-RICE allows for an improved ingredient declaration, "Rice Extract".

TECHNICAL INFORMATION

	<u>Standard</u>
Protein	14 - 16%
Fat	16 - 25%
Carbohydrates by Difference	39 - 50%
Ash	11 -13%
Moisture	≤ 7.5%

USE RATES

Powder Lecithin:

Begin initial trials at a 1 for 1 replacement rate for lecithin. Typical use rate will be lower.

Liquid Lecithin:

Create a 4:1 slurry of oil: Nu-RICE. This slurry can be used as a 1:1 replacement for lecithin. Based on functionality, decrease the rate of the slurry to improve performance.



Summary of Rice Extract As a Lecithin Replacer

RIBUS' product "rice extract" (marketed either as Nu-RICE[®] or Nu-BAKE[®]) offer the same emulsifying characteristics, but for different types of food systems. To explain how the rice bran extract works the way it does, the following information is being offered.

Background:

Food emulsions are the combination of water and lipids. Emulsions can be created through physical shear; however, stability is typically the concern. This stability is enhanced by the use of a surfactant (that reduces the surface or interfacial tension of the water) or an emulsifier. Emulsifiers often consist of compounds with both hydrophilic and lipophilic components. These components stabilize the emulsion once it is formed. Both phospholipids (lecithin) and many proteins (including egg whites) have this structure and are commonly used for their emulsifying properties.

Product Information:

Rice bran extract contains both phospholipids and protein, as referenced above. The patented process of creating rice bran extract concentrates and enhances the extracted components. The phospholipids seem to be enhanced by the probable reduction in hydrophobic fractions such as waxes. Protein enrichment occurs by both the reduction in molecular weights and a reduction in particle size via the use of enzymes. The emulsifying characteristics of the rice bran extract are due to the phospholipids and the protein, acting individually and synergistically. The functionality is further enhanced by the reduction in particle size and the removal of viscosity building starch components. Therefore, this lipid, protein and carbohydrate compound can effectively replace soy lecithin in many formulations, even though it contains more than simply lipids.

To-date, RIBUS' focus has been on application testing. Additional work is being done to quantify the various fractions of the rice extract.