Malnutrition, in the appearance of distinct underfeeding, regrettably is still common throughout Third World countries. Pictures of fully emaciated and starving children still circulate around the world and presumably represent the motor for private sponsoring of public social aids. But many are not aware of the type of malnutrition caused by deficiencies of vitamins and minerals. This type of malnutrition is better known as “hidden hunger,” since most of the people affected do not show the physical symptoms usually associated with hunger and nutrient deficiency. The lack of key vitamins and minerals, the so-called micronutrients, has been known for a long time to cause anemia, cretinism and blindness. Only in recent years has it been realized that these visible forms of deficiencies are but the tip of an enormous iceberg.

A large percentage of malnutrition is not directly related to extreme hunger but to a shortage of the nutritionally correct forms of food, particularly during early childhood. Levels of mineral and vitamin deficiencies that have no clinical symptoms can have major impacts, causing many people to live below their physical and mental potential.

The hidden form of malnutrition impairs the mental and physical development of infants and young children. It also exposes fetuses to the risk of aberration and pregnant women to death during or shortly after birth, and it undermines productivity of adults. Children easily fall victim to a vicious circle starting in poverty, causing malnutrition and sensitivity for diseases, which leads to mental and physical stunting and generates the base for restarting poverty.

The reason for hidden hunger is often simple. When daily meals are predominantly based on one starchy food such as rice, wheat flour or corn, the diet may provide enough calories but does not supply the vitamins and minerals needed for suitable nutrition to ensure good health. A balanced diet containing adequate amounts of all essential vitamins and minerals includes a variety of fruits, vegetables, pulses, dairy, eggs and possibly other foods from animal sources. People who do not consume such foods for any reason (cost, availability, traditions, ignorance, etc.) will sooner or later develop hidden hunger.

NutriRice process addresses the problem of ‘hidden hunger’

The Global Alliance for Improved Nutrition (GAIN), the globally acting non-profit organization fighting malnutrition through food fortification projects in many countries, estimates that vitamin and mineral deficiencies affect one-third of the world’s population, involving all negative aspects as described above. Hidden hunger especially exists in many countries where rice is the major staple food and provides a high per-
For more information, see Page 74.
er, may be impacted by micronutrients like ß-Carotene, and therefore may even increase the attractiveness of the rice for children. The rice reconstitution and fortification process offers the opportunity not only to compensate for vitamin and mineral losses during the whitening and polishing processes, but to add multiple micronutrients in an adequate complex designed to the local needs of populations and especially to the exposed groups such as children, pregnant women or geriatric people. The fortified reconstituted kernels are finally added to the natural whole rice kernels in a ratio of, for example, 1:100 or 2:100, guaranteeing a controlled intake of the right levels of vitamins and minerals.

With the combined knowledge of Buhler on extrusion processing and DSM on micronutrients and food fortification, a reliable process has been elaborated to overcome the challenges of efficiently fortifying rice, being qualified for production-scale application. A careful selection of vitamins and minerals along with well-adjusted process parameters is key to ensure quality of the fortified rice kernels, which can be demonstrated at Wuxi NutriRice, the China-based joint venture of Buhler and DSM.

**GAIN AWARD**

The relevance of the NutriRice concept and the well-engineered and reliable technology behind it have been recognized by eminent protagonists of international aid programs such as GAIN. Together with IBLF (International Business Leaders Forum), GAIN nominated DSM, the micronutrient expert and moving spirit for public relations within the NutriRice partnership, as the winner of the 2008 GAIN Business Award for Innovation in Nutrition. Out of more than 30 entries from all over the world, DSM won this prestigious award for the reason of “displaying outstanding innovation in the development of new products and services to fight malnutrition, improve public health and promote sustainable development.”

DSM and Buhler said the GAIN award was a great honor and hopefully will help pave the way for increased attention to the global problem of hidden hunger and the need to find solutions, which requires efforts from the private and public sectors in cooperation with NGOs (non-governmental organizations).

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