

The Surprising Story Behind Probiotics

When Dr. S.K. Dash was director of the Food and Drug Program at South Dakota from 1973 to 1979, one of the biggest challenges animal-based agriculture faced was maintaining the health of large numbers of confined livestock. Government officials, scientists and researchers had only begun to recognize that the excessive use of antibiotics in animal husbandry presented a number of important health hazards. These included presence of antibiotic residues in edible portions of meat, milk and eggs sold to consumers as well as risks of creating antibiotic-resistant “super bugs” that would become resistant to commonly used antibiotics, thus rendering people more susceptible to infectious pathogens. But, the farmers had no proven alternatives; thus, use of antibiotics for animal disease prevention and growth stimulation continued.

Dr. Dash knew it was important to find a better solution for animal health. He had been following the progress of probiotic research since the usefulness of probiotics was first identified and demonstrated by Nobel laureate Mechnikoff.

Dr. Dash learned that back in the 1950s a probiotic product actually had been licensed by the U.S. Department of Agriculture as a drug for the treatment of a disease known as scour in pigs which is caused by *E. coli* infection. This probiotic supplement was 97 percent effective in combating *E. coli* infection in pigs, a cure rate as effective as the antibiotic neomycin sulfate, the standard treatment. Unlike antibiotics, however, the natural probiotic posed no untoward side effects, left no harmful drug residues

in the edible portion of the pork, and was relatively inexpensive. Plus, the probiotic supplement provided many benefits that would lead to overall health among farm animals.

So what happened to this great probiotic product? Unfortunately, for consumers and farmers alike, the big pharmaceutical companies used millions of dollars in research, development, marketing and promotion and had taken over the market with antibiotics- the miracle drug of the time. Probiotic firms lacked funds to compete with the big drug firms in research, development, marketing and promotion and lost the battle against antibiotic manufacturers.

Meeting the Challenge of Modern Probiotics

Although he knew that the time had come for the public to rediscover probiotic supplementation, Dr. Dash recognized that significant challenges would have to be overcome in order to deliver to the consumer viable, health-promoting bacterial cultures. Thus, while working for the government, Dr. Dash played an integral role in introducing quality control standards for probiotics, which are now used by the industry worldwide.

After leaving government work, Dr. Dash began to work closely with the researchers at the University of Nebraska. There, scientists had isolated a strain of *Lactobacillus acidophilus* now called DDS®-1. DDS®-1 *L. acidophilus* was being extensively researched with published papers showing its health benefits. It had been found that this specially isolated and cultured strain possessed

properties significant to digestion and nutritional health. For example, it produced enzymes

(such as proteases and lipases) to aid the body’s digestion of proteins and fats, respectively. Other documented benefits, perhaps of even greater significance, were the strain’s antibacterial actions, which were essentially equivalent to those of antibiotics.

Today, more than 100 papers on this bacterial strain have been published in scientific journals over a period of more than 40 years. But at the time, DDS®-1 *L. acidophilus* was not commercially manufactured and unavailable to the consumer. Thus, Dr. Dash founded UAS Laboratories in 1979, which became the first to get DDS®-1 commercially manufactured and first to:

- Implement a unique process of commercially producing, freeze-drying and naturally stabilizing the bacterium for delivery to consumers;
- Introduce non-dairy probiotics;
- Introduce quality control standards for probiotics requiring guarantee of viable bacteria (CFU/g);
- Package probiotics with nitrogen to improve the stability of the probiotics
- Prove that DDS®-1 *L. acidophilus* can pass through stomach acid, implant in the intestines, and multiply 100 to 200 fold;



- Incorporate the prebiotic fructooligosaccharides (FOS) with probiotics to enhance their growth in intestines.

UAS Labs Maintains Leadership

All of these innovations, from UAS Labs under the leadership of Dr. Dash, have been incredibly important to the probiotic category and have provided leadership in its most meaningful format – by example.

Today, of course, probiotic products are now available in different formulations with *Lactobacillus acidophilus*, *Bifidobacterium longum*, *Bifidobacterium lactis*, *Bifidobacterium bifidum* and others with or without prebiotic fructooligosaccharides (FOS).

Studies at the Minneapolis VA Hospital show that the average man or woman no longer has adequate populations of friendly bacteria in their intestines. Supplementation with certain probiotics has clearly been demonstrated to enhance the presence of these friendly bacteria in the intestine, leading to greater population numbers of beneficial bacteria.

Unfortunately, to take advantage of this burgeoning market, many so-called probiotic supplements have appeared on the market using UAS Labs' trademarked DDS®-1 strains. UAS Laboratories is the owner of the U.S. trademark "DDS®." UAS Laboratories uses this DDS® trademark and other variants like *DDS-1*, *DDS-30*, *DDS-60*, and *DDS-100*. When seeking true DDS-1 strains for reliability, safety and efficacy, be sure that you seek products using this registered trademark.

Unfortunately for the consumer, individuals or firms using DDS or confusingly similar marks without

written authorization from UAS Laboratories are in violation of the U.S. Patent and Trademark law, and the product most likely was not developed by UAS Laboratories, and thus, does not offer consumers or health professionals the assurances of a true, quality probiotic supplement.

Now, in the 21st Century, UAS Labs' growing line of DDS probiotic supplements is widely regarded as the leader in the field for safe and efficacious use by adults and children alike.

UAS Laboratories has conducted research studies on its probiotic supplements for health conditions such as digestive disorders, IBS, acne, UTI and others with positive results.

Dr. Dash has received numbers honors and awards such as Frost & Sullivan Award, Probiotic Prophet and Distinguished Man of the Year for his many contributions to probiotic industry. Recently Dr. Dash has funded innovation centers and endowed chairs at the Indian Institute of Technology, Bhubaneswar, India, and at South Dakota State University, Brookings, South Dakota, USA, to conduct probiotic, nutrigenomics and food science research.

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DD INNOVATIONS

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Growth of the probiotic industry has been fast and fierce. Probiotic sales comprised a small, \$10 million slice of the supplement industry in 1979. Since that time, the probiotic industry has grown into what is projected as a \$31 billion sector by the year 2015. The probiotic awareness has increased from 5% in 2004 to 81% in 2011.

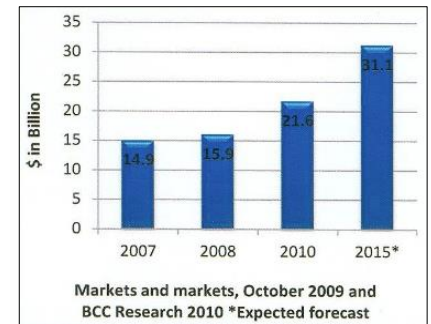


Fig.1.Global probiotics market expected to grow at a CAGR of 12.6% from 2009 to 2014.

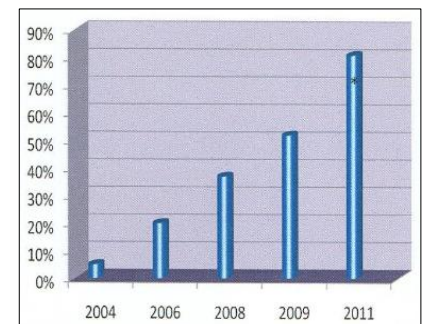


Fig.2.Less than 10% of consumers knew what probiotics were 10 years ago, now more than 81% know and most use probiotics.

Source: Survey by International Food Information Council (IFIC 4/2011)