

Interview with Dr José Saavedra – a pioneer in infant nutrition

During April 2011 Dr Jose Saavedra – Associate Professor of Paediatrics at the Johns Hopkins School of Medicine and the Johns Hopkins Bloomberg School of Public Health, and Vice President for medical, scientific and regulatory affairs for Nestlé Nutrition – was in Johannesburg to give a series of lectures on infant nutrition at the University of Pretoria

In the early 90s, Dr Saavedra's seminal research at Johns Hopkins School of medicine received worldwide attention, as it was the first ever to document the benefits of regular ingestion of probiotics in infants.

These initial studies helped usher in a new understanding of the disease prevention benefits of functional ingredients in infant nutrition and, more than a decade later, resulted in the launch of the first infant formula with probiotics in the USA.

Today, Dr Saavedra has an extensive list of publications in the area of nutrition and clinical research, and is a reviewer for all the major nutrition and paediatric journals.

His work in the area of intestinal microflora, disease prevention, and health maintenance through nutrition has also led

him to becoming highly sought after as a speaker internationally.

In an interview with *PedMed*, he shared some insights about why probiotics are so helpful to the immune system in infants.

Dr Saavedra says, "The old ideas about how probiotics work were that we needed to give good bacteria to fight bad bacteria. Today that thinking has changed. The new idea is that probiotics help to modulate and train a child's immune response."

Explaining why this new way of thinking about probiotics has emerged, he explains: "There has been a huge surge of clinical trials on the effects of probiotics in humans and especially in infants and children. These studies have examined how probiotics modify the responses of infants to disease".



Dr Jose Saavedra – Associate Professor of Paediatrics at the Johns Hopkins School of Medicine and the Johns Hopkins Bloomberg School of Public Health

intestinal lining, it won't have any antibodies and it won't have plenty of immuno-competent cells in the gut."

Dr Saavedra pauses for emphasis and says, "In babies we see the same thing."

He adds, "It's become well known that babies born into a non-sterile environment are healthier. For example, babies born through vaginal delivery, who come down the birth canal, pick up a lot of bacteria because it's messy. Babies also get bacteria from breastfeeding. Whereas babies born via C-section become increasingly susceptible to infections and allergies. Babies born by C-section and formula-fed are

very disadvantaged."

Nutritional experts have thus adopted a compensatory strategy to deal with the deficiency of bacteria that Caesarean and formula-fed infants experience. The idea is to



He continues, "Seventy percent of our immune-competent cells are in the GI tract. So the most important barrier to the external environment is the gut and the cells in the gut. But when a baby is born, there are no bacteria in his or her intestinal system. Within the first 72 hours after birth, the number of bacteria increase from zero to trillions. These bacteria become the first stimulus for the baby to react to the environment. They literally train the immune system to respond in certain ways to the environment."

Dr Saavedra offers an example, "If you raise an animal in a completely sterile environment, its gut won't have a thick

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give these babies the bacteria they haven't received, through probiotics.

As Dr Saavedra explains, "We know certain bacteria are beneficial for babies. For instance, breastfed babies have plenty of *Bifidobacteria*."

In addition, the first bacteria to colonise a baby's intestines are from the *Bifidobacterium* family. Within the genus *Bifidobacteria* there are many strains, but these are the two best known – *Bifidobacteria animalis subsplactis* and *B. infantis*. In addition, studies have also been done on the genus *Lactobacillus*, which has many strains. The most numerous studies have been done on *Lactobacillus rhamnosus*, *L. Reuteri* and *L. Plantarum*."

But aside from probiotics, Dr Saavedra is passionate about ensuring infants get the right kinds of nutrients, to maintain their health and prevent disease.

He says, "If infants have to take formula we need to minimise the problems that come

from not receiving breastmilk. For instance, infants shouldn't be getting 'intact' cow's milk protein, they should rather get hydrolysed milk protein."

Explaining why, he says: "Most babies will suffer from reflux if they are on cow's milk-based formula because they cannot digest the casein. This is why hydrolysed milk protein is better than intact cow's milk for them." He explains that formula manufacturers hydrolyse the milk protein, by separating the casein from the whey protein and removing it.

Discussing the many fascinating studies on the power of nutrition to prevent disease, Dr Saavedra mentions how women who diet or are malnourished during pregnancy tend to give birth to children who later become obese as adults. Studies have shown that infant rats born to malnourished rat mothers are deficient in leptin, the hormone that assists with appetite control.

Asked whether these studies have been replicated in human infants, Dr Saavedra cites the Dutch Famine Birth Cohort Study. This study was carried out by researchers at the Academic Medical Centre in Amsterdam, in collaboration with the MRC Environmental Epidemiology Unit of the University of Southampton, UK.

During World War II, pregnant women who suffered malnutrition in early gestation

gave birth to babies who were malnourished in utero. Researchers found that these children had a high risk of serious health problems, including obesity (women only, not men), diabetes (those exposed to undernutrition in mid or late gestation were most affected) and cardiovascular disease (a three-fold increase).

With this in mind, it's not surprising that Dr Saavedra has had a lifelong passion to help maintain children's health and prevent disease through nutrition.

NEW NUTRITIONAL SCIENCES

Explaining the emerging new nutrition-related sciences, Dr Saavedra explains: "Nutrigenomics is about how specific components of the diet influence individuals differently. This may lead to personalising the diet in such a way as to overcome disease. Epigenetics is all about explaining the changes we see, especially in the development of chronic, non-communicable diseases. There is a significant body of evidence that indicates environmental factors can switch genes on or off. Influences in the environment – toxins, chemicals, hormones, nutrition, our microbial environment."

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ABOUT DR JOSE SAAVEDRA

After graduating from medical school in Peru, Dr Jose Saavedra became a fellow at the Nutrition Research Institute in Lima, where he began research into dietary management of diarrhoeal disease and malnutrition. He spent much of this time studying digestive diseases, which solidified his desire to work in the area of paediatric nutrition.

He moved to the USA to pursue his training in paediatrics at the SUNY Downstate Medical Center in New York, after which he became a fellow in Gastroenterology and Nutrition at The Johns Hopkins University School of Medicine, where he has remained on the faculty for two decades.

Dr Saavedra created the Johns Hopkins Children's Nutrition Center, which he directed for 10 years. He currently holds joint appointments, as Associate Professor of Paediatrics at the Johns Hopkins School of Medicine and the Johns Hopkins Bloomberg School of Public Health.

In 2000, Dr Saavedra joined Nestlé Nutrition as Medical and Scientific Director and created the Medical, Scientific and Regulatory affairs Unit. In 2004 he became Vice President for medical, scientific and regulatory affairs for Nestlé Nutrition in North America. He continues to be clinically active, following patients at the Johns Hopkins Children's Center.