

Role of Milk and Milk Product in Body Immune System

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No formula milk can beat breast milk in terms of nutrition, enzymes, growth factor, hormones, immunology traits or outcomes for baby's growth. Breast milk also makes baby smarter whilst reduces the prevalence of obesity during infancy and adolescence.

Data from UNICEF's State of The World's Children Report 2011 said of 136.7 million of newborns around the world, only 32.6 percent get exclusive breast milk until their first six months. Those that don't get it are due to the health of the mother or lack of breast milk production.

"Therefore, formula milk is needed to replace the breast milk. Although it is impossible to produce formula milk that is identical with breast milk, but the effort to replicate the nutrients in breast milk has been made for the sake of the normal growth of the baby," said Prof. Dr. Ir. Nurliyani, M.S in the Senate Hall UGM on Wednesday (29/11).

According to Nurliyani, production of functional milk including fermented milk and nutritious milk has grown very dynamically. Fermented milk is the vehicle to distribute probiotics most efficiently.

"Fermented milk enables retention and optimisation of the life and productivity of microbes," she said.

Delivering her professorship inaugural speech in Animal Sciences discipline titled *Role of Milk and Milk Product in Body Immune System*, Nurliyani said probiotic microorganism may affect the colon microbial community, and is acknowledged as therapeutic component for intestinal dysbiosis treatment. Neuroactive molecules that are produced by microbiota in the colon can also modulate neural signs that affect the neurological and psychological parameters such as sleep, appetite, mood and cognition.

"The metabolites that are produced by colon bacteria also have immunomodulatory traits and can interact with nerve cells by stimulating sympathetic and autonomous nervous systems," she said.

The nutrients and bioactive components of milk from cattle, said Nurliyani, have the big role in optimising lymphoid organs in order to perform optimally. As such, immune cells become optimum in giving humoral or cellular immune responses. Hence, differences and uniqueness of milk components including bioactive components from various cattle species may trigger different immune responses, whether non-specific or specific immune responses.

According to Nurliyani, the differences in milk processing may affect the immune response it creates. On the one hand, processing can cause immune system modulation or reduce the allergenic characteristics, and on the other hand it can cause new antigenic characteristics.

"Therefore, milk processing has to be adjusted to the required functional goal of the products," she said.

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