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Disease risk screening using plasma free amino acids: Initial commercialization and future potential

The potential for using plasma amino acids as a metabolomic subset to identify disease risk has been shown and since 2011, a commercial service for several types of cancers (gastric, lung, colorectal, breast, cervical and prostate cancer) risk screening utilizing Plasma Free Amino Acid (PFAA) concentrations, called AminoIndex®, has been available in Japan. Collaborating with two of the largest clinical laboratory testing companies in Japan, AminoIndex® is now available in more than 1,000 hospitals in Japan. In 2015, risk screening for pancreatic cancer, one of the most challenging malignancies to treat, was added. The accumulation of several years of data has allowed the generation of predictive biomarkers and in 2017 we launched a new biomarker using PFAAs to evaluate the future risk of developing diabetes within four years. We also found sub-populations with decreases in essential and semi-essential amino acids in plasma which could be the result from insufficient protein intake and are following clinical outcomes for this sub-population. Since protein malnutrition is common across varying populations, including the elderly and could cause increased risk of sarcopenia, heart failure and impaired immune response, PFAA profiles could be possible biomarkers to perform early nutritional interventions. The possibilities to utilize PFAAs as biomarkers are expanding and cardiovascular disease and Alzheimer's disease might be the next possible targets. It is important to distinguish the pre-symptomatic disease from the truly healthy person for early interventions to reduce medical costs. Utilizing PFAAs as biomarkers for the pre-symptomatic disease conditions could be the promising way for achieving "precision nutrition" in the future.

Biography

Takeshi Kimura is a Board Member and Corporate Vice President for Ajinomoto Co., Inc. and is currently In-Charge of Research and Development, Intellectual Property, Quality Assurance and Regulatory Affairs. He has studied Cell and Molecular Biology at University of London, Kings College and has obtained his PhD in Biochemistry from University of London in 1984. He was a Visiting Fellow and Visiting Associate at the National Institutes of Health in the USA before joining Ajinomoto in 1989. He has worked in research, regulatory affairs and quality assurance since then, helping to establish the basis of AminoIndex Technology while in research. He is also a Member of the Board of Trustees for International Life Sciences Institute and Research Foundation, International Advisory Council Member for Monell Chemical Senses Center and Japanese Private Sector Member for APEC Policy Partnership for Food Security

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