MITSUBISHI GAS CHEMICAL COMPANY, INC.

Biological Products

September 24, 2003

**Mitsubishi Gas Chemical Company Inc. speeds the development of application of coenzyme PQQ-vitamin.**

Mitsubishi Gas Chemical Company, Inc. (Head Office: Tokyo, President:Hideki Odaka, hereinafter abbreviated as MGC) speeds the research and development of the Fourteenth Vitamin - pyrroloquinoline quinone (hereinafter abbreviated as PQQ).

PQQ is one of the coenzymes of oxidoreductase essential for the bioenergetic acquisition system. In 1979, it was discovered as the third coenzyme next to nicotinamide adenine dinucleotide (NAD) and flavin adenine dinucleotide (FAD) by research of $C_1$ eutrophic microorganisms. PQQ is extensively present in animals and plants including microorganisms, and its various functions of physiological activity and activity as an essential nutrient have also been observed. Additionally, in April of this year, it became clear that PQQ is a vitamin.

Leading the world, MGC has established manufacturing technology of PQQ through its own fermentation technology, and PQQ has been extensively sold as research reagent and has been used by many researchers since 1987. Simultaneously, MGC has discovered antioxidation of PQQ, potentiation of nerve growth factor (NGF), and aldose reductase inhibition (ARI) by physiological and pharmacological research of PQQ in collaboration with many universities. Additionally, MGC has developed a measuring method for a slight amount of PQQ inside organic bodies by the gas mass analysis method in collaboration with the universities, and has elucidated that many foods such as vegetables and meats, especially natto (fermented soybeans, 61ng/g), parsley (34ng/g), and green tea (30ng/ml) are rich in PQQ and that PQQ is present also in the human body.

In 1989, PQQ deficiency (poor development or decreased ability of reproduction is induced without PQQ) in mice was observed, but it was unclear what kind of enzyme PQQ would bind to. In April of this year, aminoadipic acid semialdehyde dehydrogenase involved in degradation of lysine as an enzyme for coenzyme PQQ was discovered for the first time in mammals by a research team of The Institute of Physical and Chemical Research. Because of this discovery, PQQ has been much watched as the Fourteenth Vitamin discovered for the first time in fifty years since Vitamin $B_{12}$ was discovered in 1948.

Since vitamin action of PQQ was known, MGC speeds the development of nutrition products of PQQ, based upon the past knowledge of PQQ.

“The Organism Quinone Research Group” to widely study oraganism quinone compounds such as PQQ was set up in August of last year. For the second lecture meeting (September 26 of this year, the Surugadai Memorial Hall of Chuo University), PQQ Symposium by domestic and overseas researchers - A New Vitamin = The Latest Research about Coenzyme PQQ - will be held. PQQ is attracting attention also from the research of a new vitamin.

For more information

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