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### Improving effects of Zn(II) Complex with Papaya Powder on Model Animals of Type 2 Diabetes Mellitus

Kinuyo Matsumoto<sup>1)</sup>, Hiroko Hashimoto<sup>1)</sup>, Yutaka Yoshikawa<sup>2)</sup>, Yoshitane Kojima<sup>3)</sup>, Hiroshi Taniguchi<sup>4)</sup> and Naemi Kajiwara<sup>1)</sup>

1) Laboratory of Nutrition Physiology, Graduate School of Life Science, Kobe Women's University

2) Department of Analytical and Bioinorganic Chemistry, Kyoto Pharmaceutical University

3) Arita Enzyme Laboratory Inc.

4) Yamato Institute of Lifestyle-related Diseases

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#### Abstract:

Zn(II) complex is known to have insulinomimetic activity at a lower concentration than the simple Zn ion. In this study, the effects of Zn(II) complex with papaya powder (papaya/Zn) were assessed in two kinds of model animals of type 2 diabetes. At first, we investigated anti-diabetic effects of papaya/Zn on KK-A<sup>y</sup> mice. Each animal was examined for its body weight, food intake, blood glucose levels, glucose tolerance and HbA<sub>1c</sub> levels. As results, the body weight of mice treated with papaya/Zn was significantly lower than the other diet groups after 1 week of administration. This tendency lasted till the eighth week of age. Blood glucose level also showed the same tendency. After 6 weeks, the mice treated with papaya/Zn showed significant decrease in HbA<sub>1c</sub> level and significantly lower level of blood glucose at 0 and 180 minutes in oral glucose tolerance test. And we also investigated effects of papaya/Zn on Otsuka Long-Evans Tokushima Fatty (OLETF) rats, model animals of type 2 diabetes with obesity, and Long-Evans Tokushima Otsuka (LETO) rats as non-obese and non-diabetic controls. The oral administration of papaya/Zn during a period of 6 to 24 weeks of age did not effect on the body weights, fat deposits in abdominal cavity and abdominal subcutaneous tissues, fasting blood glucose levels, glucose tolerances, and serum triglyceride levels in both groups of rats. However, blood fluidity in OLETF rats was improved significantly compared to that of LETO rats with papaya/Zn. In addition, the level

of plasma thiobarbituric acid reactive substance (TBARS), an indicator of oxidative stress, decreased significantly after administration of papaya/Zn. Thus, papaya/Zn might be a useful supplement for prevention of complications in type 2 diabetics through improving blood fluidity and reducing oxidative stress.

**Key words:** Zn(II) complex with papaya powder, OLETF, KK-A<sup>y</sup>, MC-FAN, TBARS

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