

## Results report

- 1 . Title of Research and Development : Evaluation of different extracts and isolated compounds from Brazilian Propolis in obesity and diabetes via in vitro and in vivo assay.
- 2 . Principal Investigator : Je Tae Woo (Department Biological Chemistry, Chubu University; Professor)
- 3 . Counterpart Principal investigator : Jairo Kenupp Bastos (Pharmaceutical Sciences, University of São Paulo; Professor (Brasil))
- 4 . Results of Research and Development:

Propolis is widely used as a functional food and its various physiological activities are also being accumulated for scientific evidence. We have reported that one of the cinnamic acid derivatives, contained in the characteristic of Brazilian green propolis, improves insulin resistance in the cellular level and in the animal level. However, there are still questions about the detailed mechanisms of its action. In addition, it is desired to improve bioavailability of propolis products for the practical use.

The main objective of our research was to develop a new functional food that prevents and/or improves obesity and diabetes. Lipid nanoparticles of Brazilian green propolis formulations were made for improving in vivo absorption and then the stability and sustained release were evaluated.

Secondly, as our second objective, in order to obtain scientific evidence of the Brazilian green propolis and develop it as a high value-added product, we screened new functions of the ingredients of Brazilian green propolis in cell culture systems. As a result, we found a novel effect of cinnamic acid derivative compounds from Brazilian green propolis on adipocyte and pancreatic  $\beta$  cells, which might reveal a part of the mechanism of antidiabetic action.

This Japan-Brazil joint project promoted propolis research for scientific evidence and contributed in training for international young researchers by collaborating with foreign scientists.