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Hypoglycemic mechanism of guava leaf extract: slow inactivation of protein tyrosine phosphatase 1B (PTP1B)

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Guava leaf tea, has been used as a folk medicine for treating hyperglycemic conditions in Asia and Africa. The hypoglycemic efficacy of guava leaf has been documented by many scientists in these regions, but the hypoglycemic mechanism is poorly understood. Guava leaves were extracted with methanol and the crude extract was partitioned against hexane, ethyl acetate, and butanol in sequence. The leftover in water is defined as the aqueous partition. A second smaller batch was extracted with hot water directly. Our study confirmed the hypoglycemic efficacy on healthy mice and found the most effective molecules reside in the aqueous partition which is also less cytotoxic to Chinese hamster ovary cells when compared to other less

polar partitions. Therefore, the guava leaf tea can serve as a functional hypoglycemic drink that is suitable for either healthy or diabetic subjects. Coincidentally the aqueous partition possesses a potent inhibitory effect on protein tyrosine phosphatase 1b (PTP1B) enzymatic activity and this PTP1B inhibition is through a slow oxidative inactivation on the enzyme.

Speaker Biography

Henry J Tsai obtained his PhD in Biochemistry (1996) and MS in Nutritional Science (1990) from the Michigan State University. He is currently an Associate Professor at the Department of Health and Nutrition, Asia University, Taiwan.

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