2016/17 Summer Scholarship Project

**Project title:** Active compounds and cellular activities of Australian herbal medicines for diabetics

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**Project type:** Laboratory-based

**Research theme:** Cardiovascular and Diabetes

**Project description:**  
Herbal medicines including centella, propolis, and dendrobium have been used in traditional medicines for the treatment of diabetes. However, the active compounds, and mechanism of actions of these herbs in Australian have not been well defined. Therefore the current project aims to evaluate the potential of these herbs in diabetes focusing on the active constituents and mechanism of actions.

**Aims**  
1. To separate extracts into fraction and pure compounds and identify their chemical structures.  
2. To test the fractions and pure compounds for activities in glucose and lipid uptake.

**Significance**  
The cellular assay and lead compounds will contribute to drug discovery and development in diabetes. Ultimately the public health significance of this research will be to improve health outcomes and reduce the financial burden of diabetes.

**Methods**  
The herbal samples will be collected and extracted with ethanol; partition with chloroform, butanol, and water; separation and isolation of pure compounds and fraction with silica gel column, finger printing and quantitative analysis with TLC, HPLC, LCMS, and NMR.  
The biological effects will be tested in cell lines with high and low glucose and lipid in adipocytes, hepatocytes, and endothelial cells.

**Feasibility**  
Our research team has the expertise and experience required for this project in analytical chemistry, phytochemistry and cell biology. We have extensive publications on natural products and the team members have both national and international ongoing collaborations.