In vitro evaluation of anti-hyperglycaemic activity of medicinal plants traditionally used in Sikkim, North East India

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Sikkim in North East India, has a rich ethnomedicinal practice and a large proportion of the local people rely on medicinal plants for the management of diabetes. Anti-hyperglycaemic effect of ten medicinal plants traditionally used by the local population in Sikkim to treat diabetes was evaluated using two *in vitro* methods – glucose uptake in yeast cells and α-amylase inhibition assay. Most of these medicinal plants demonstrated anti-hyperglycaemic effect, amongst which the leaves of *Catharanthus roseus* and *Nyctanthes arbor-tristis* displayed considerably greater activity than the other plant extracts. Both *C. roseus* and *N. arbor-tristis* showed greatest increase in glucose uptake at 25 mM glucose concentration (80.20% ± 3.01 and 78.83% ± 2.66 respectively), and maximum α-amylase inhibition of 72.29% ± 0.58 (IC_{50} = 154.30 µg/ml) and 69.98% ± 1.16 (IC_{50} = 150.48 µg/ml) respectively at 250 µg/ml concentration of the extracts. The values were comparable to the standard drugs. Ethnomedicinal practices largely rely on observations, experience and regional beliefs. Support from scientific assessment studies will not only encourage traditional practices in the region, but also contribute in the development of alternative drugs of natural origin for diabetes.

Keywords: Anti-hyperglycaemic activity, α-amylase, diabetes, glucose uptake, medicinal plants.