

Overviews of functional properties and folk medicinal use of indigenous vegetables in Taiwan

Ray-Yu Yang*, Hsin-I Wang, and Wan-Jen Wu

Nutrition Laboratory, Healthy Diets Program, World Vegetable Center, Tainan, Taiwan

*Corresponding author: ray-yu.yang@worldveg.org

Abstract

Evidence for associations between disease prevention and increased vegetable consumption are generally positive, but studies report weak causal linkages and inconsistent results that vary among different populations with different dietary patterns. Many traditional vegetables highly consumed in the past are neglected in current food systems. It is possible that the health benefits of phytonutrient intake from plant foods may have been underestimated because modern diets include fewer crop types and lower varietal diversity. We conducted literature reviews on reported functional properties (anticarcinogenic, antimicrobial, antioxidative, anti-diabetic and anti-inflammatory activities and others) for 150 Taiwan indigenous vegetables using keywords of their scientific names and terms related to functional properties and medicinal uses. Information on folk medicinal uses or herbal remedies were retrieved from the open-access “Database of Common Medicinal Plants in Taiwan”. The latest review papers and original research articles on functional properties of one or groups of vegetables evaluated them using a range of methods including in-vitro, cell, animal and human models. About 90% of the listed 150 species were mentioned in one or more studies reporting either one or several functional properties. Anti-oxidant activity was the mostly mentioned, followed by anti-inflammatory, anti-diabetic, anti-carcinogenic and anti-microbial properties using in vitro and cell models. Functional properties of about 15% of species (eg. *Amaranthus*, *Talinum paniculatum*, *Oenanthe javanica*, *Perilla frutescens*) have been studied using animal models. Investigations involving human subjects were conducted with a few vegetable species such as bitter melon (*Momordica charantia*) for anti-hyperglycemia (anti-diabetes) and Chinese yam (*Dioscorea alata*) for reduced risks of breast cancer and cardiovascular diseases. About 50% of the listed species were used as both food and herbal remedies according to Traditional Chinese Medicine. Our review summarizes studies on Taiwan indigenous vegetables for functional properties from current research and folk uses that will help to prioritize plant species for further research and future applications. The work was financially supported by Council of Agriculture (COA), Taiwan.

Keywords: anti-oxidant, anti-inflammation, anti-cancer, anti-diabetes, chronic diseases, protective effects