Available online at www.sciencedirect.com
ScienceDirect
Journal of Ethnopharmacology 117 (2008) 1–27
Journal of ETHNO-PHARMACOLOGY
www.elsevier.com/locate/jethpharm

Review

Psidium guajava: A review of its traditional uses, phytochemistry and pharmacology

Rosa Martha Pérez Gutiérrez [a,*], Sylvia Mitchell [b], Rosario Vargas Solis [c]

[a] *Laboratorio de Investigación de Productos Naturales, Escuela Superior de Ingeniería Química e Industrias extractivas IPN, Punto Fijo 16, Col. Torres Lindavista C.P. 07708 México, D.F., Mexico*
[b] *Medicinal Plant Research Group, Biotechnology Centre, 2 St. John's Close, University of the West Indies, Kingston 7, Jamaica*
[c] *Laboratorio de Investigación de Fitofarmacología, Universidad Autónoma Metropolitana-Xochimilco A.P. 23-181 México, D.F., Mexico*

Received 18 August 2007; received in revised form 26 January 2008; accepted 29 January 2008
Available online 3 February 2008

Abstract

Psidium guajava, is an important food crop and medicinal plant in tropical and subtropical countries is widely used like food and in folk medicine around of the world. This aims a comprehensive of the chemical constituents, pharmacological, and clinical uses. Different pharmacological experiments in a number of *in vitro* and *in vivo* models have been carried out. Also have been identified the medicinally important phyto-constituents. A number of metabolites in good yield and some have been shown to possess useful biological activities belonging mainly to phenolic, flavonoid, carotenoid, terpenoid and triterpene. Extracts and metabolites of this plant, particularly those from leaves and fruits possess useful pharmacological activities. A survey of the literature shows *P. guajava* is mainly known for its antispasmodic and antimicrobial properties in the treatment of diarrhoea and dysentery. Has also been used extensively as a hypoglycaemic agent. Many pharmacological studies have demonstrated the ability of this plant to exhibit antioxidant, hepatoprotection, anti-allergy, antimicrobial, antigenotoxic, antiplasmodial, cytotoxic, antispasmodic, cardioactive, anticough, antidiabetic, antiinflamatory and antinociceptive activities, supporting its traditional uses. Suggest a wide range of clinical applications for the treatment of infantile rotaviral enteritis, diarrhoea and diabetes.

Keywords: *Psidium guajava*; Myrtaceae; Clinical; Complementary medicine; Phytochemical constituents; Pharmacological actions

Contents

* Corresponding author at: Punto Fijo No. 16, Col. Torres de Lindavista, C.P. 07708 Mexico, D.F., Mexico.
E-mail address: rmpg@prodigy.net.mx (R.M.P. Gutiérrez).

0378-8741/$ – see front matter © 2008 Published by Elsevier Ireland Ltd.
doi:10.1016/j.jep.2008.01.025

1. Introduction

Psidium guajava, which is considered a native to Mexico (Rios et al., 1977) extends throughout the South America, European, Africa and Asia. Based on archaeological evidence. It has been used widely and known in Peru since pre-Columbian times. It grows in all the tropical and subtropical areas of the world, adapts to different climatic conditions but prefers dry climates (Stone, 1970). The main traditional use known is as an anti-diarrhoeal. Other reported uses include gastroenteritis, dysentery, stomach, antibacterial colic pathogenic germs of the intestine.

Its medicinal usage has been reported in indigenous system of medicines in America more than elsewhere. *Psidium guajava* Linn. (family Myrtaceae), is commonly called guave, goyave or goyavier in French; guave, Guavenbaum, Guayave in German; banjiro in Japanese; goiaba, goiabeiro in Portugal; araçá-goiaba, araçá-guaçú, guaiaba in Brazil; guayaba, guayabo in Español and guava in English (Killion, 2000). *Psidium guajava* is a small tree which is 10 m high with thin, smooth, patchy, peeling bark. Leaves are opposite, short-petiolate, the blade oval with prominent pinnate veins, 5–15 cm long. Flowers are somewhat showy, petals whitish up to 2 cm long, stamens numerous (Stone, 1970). Fruit are fleshy yellow globose to ovoid berry about 5 cm in diameter with an edible pink mesocarp containing numerous small hard white seeds. There has been a tremendous interest in this plant as evidenced by the voluminous work. Therefore, we aimed to compile an up to date and comprehensive review of *Psidium guajava* that covers its traditional and folk medicine uses, phytochemistry and pharmacology.

1.1. Use in traditional medicine

More recent ethnopharmacological studies show that *Psidium guajava* is used in many parts of the world for the treatment of a number of diseases, e.g. as an anti-inflammatory, for diabetes, hypertension, caries, wounds, pain relief and reducing fever (Table 1). Some of the countries with a long history of traditional medicinal use of guava include Mexico and other Central American countries including the Caribbean, Africa and Asia. Some of these uses will be outlined here.

Medicinal plants are an important element of the indigenous medical systems in Mexico (Lara and Marquez, 1996). These resources are part of their traditional knowledge. The Popoluca Indians of Veracruz rely on medicinal plants for their health care. They appear to have developed a system whereby they select and continue to use plants that they find the most effective for health care purposes. The folk use of guava has been documented in the indigenous groups of Mexican Indians, Maya, Nahuatl, Zapotec and Popoluca. A decoction of the leaves is used to cure cough. According to communities of Nahuatl and Maya origin and Popoluca of the region of the Tuxtlas, Veracruz, they use a guava leaf decoction to treat digestive suffering associated with severe diarrhoea. This is a frequent disease in rainy weather (Heinrich et al., 1998).

P guajava (Myrtaceae) is widely used in Mexico to treat gastrointestinal and respiratory disturbances and is used as an anti-inflammatory medicine (Aguilar et al., 1994). Commonly roots, bark, leaves and immature fruits, are used in the treatment of gastroenteritis, diarrhoea and dysentery. Leaves are applied on wounds, ulcers and for rheumatic pain, while they are chewed to relieve toothache (Heinrich et al., 1998). A decoction of the new shoots is taken as a febrifuge. A combined decoction of leaves and bark is given to expel the placenta after childbirth (Martínez and Barajas, 1991). A water leaf extract is used to reduce blood glucose level in diabetics. This hot tea was very common among the local people of Veracruz (Aguilar et al., 1994).

The leaf of *Psidium guajava* is used traditionally in South African folk medicine to manage, control, and/or treat a plethora