

Abstract

Pharmacological activities of highland plant against diseases in humans and animals were evaluated to investigate the bioactive compounds from highland plant for discovering phytochemical studies and antimicrobial human and animal pathogens. Previous research, computational chemistry suggested that ten plants —*Euphorbia heterophylla* L., *Piper interruptum* Opiz., *Vernonia cinerea* (L.) Less., *Gynostemma pentaphyllum* (Thunb.) Makino, *Harrisonia perforata* (Blanco) Merr., *Cinnamomum iners* Reinw. ex Blume., *Mimosa pudica* L., *Acorus calamus* L., *Stephania pierrei* Diels. and *Morus macroura* Miq.— were chosen to extract with different polarity solvents for screening bioactive compounds of the phytochemicals, antioxidant activities and antimicrobial human and animal pathogens.

Phytochemical studies indicated that the secondary metabolite extracts of selected plants consisted of phenolic compound, flavonoid, tannin, alkaloid and terpenoid which are depended on differential solubility in organic solvents. The phenolic contents in three plants was their potents including *Cinnamomum iners* Reinw. ex Blume., *Harrisonia perforata* (Blanco) Merr. and *Gynostemma pentaphyllum* (Thunb.) Makino. According to antioxidant techniques by the DPPH free radical assay showed that *Harrisonia perforata* (Blanco) Merr. and *Cinnamomum iners* Reinw. ex Blume. extracts gave EC₅₀ value of 1.72 and 2.88 µg/mL, respectively, while ascorbic acid gave EC₅₀ values of 5.05 µg/mL. Furthermore, reducing power activity revealed that *Gynostemma pentaphyllum* (Thunb.) Makino extract could reduce from ferric iron to ferrous iron and exhibit high reducing power activity.

The antifungal activity of *Colletotrichum gloeosporides* (anthracnose in strawberry leaves) was investigated. The butanol extract from leaves of *Harrisonia perforata* (Blanco) Merr. showed a mycelial fungus germination involved that production of germ tube disorder characterized. On the other hand, antibacterial activities of *Propionibacterium acnes* (acne), *Pseudomonas aeruginosa* (opportunistic infections occurred in human immunocompromised and sick) and *Staphylococcus aureus* (food poisoning) were evaluated. It was found that essential oil from bark extract of *Cinnamomum iners* Reinw. ex Blume. inhibited growth of three species of bacteria. The *trans*-cinnamaldehyde was the main volatile compound of *Cinnamomum iners* Reinw. ex Blume. and exhibited potent inhibitory activity.