

Organoleptic and phytochemical analyses of different extracts of *Andrographis paniculata* (Burm. f.) Wall. ex Nees whole plant of Cambodia

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Abstract: *Andrographis paniculata* (Burm. f.) Wall. ex Nees (Family: Acanthaceae) has been traditionally used for the treatment of cancer, diabetes, bronchitis, dermatitis, influenza, dysentery, dyspepsia and malaria for centuries. This research aims at analyzing the organoleptic features and phytochemicals of *Andrographis paniculata* (Burm. f.) Wall. ex Nees native to Cambodia. Dried whole plant of *Andrographis paniculata* (Burm. f.) Wall. ex Nees was obtained from the local plant drugstore and authenticated by University of Puthisastra (UP)-Herbarium (UPFPH-120012). The organoleptic features of the dried whole plant of *Andrographis paniculata* (Burm. f.) Wall. ex Nees revealed that the flowers were violet streak and tubular-shaped, stems and leaves were dark green; the odour was characteristic; the taste was strongly bitter; and the texture of stem was slightly coarse. The extracting yields accounted for 10.23% (methanol extract), 1.21% (ethanol extract) and 3.30% (chloroform extract). The phytochemical analysis demonstrated the positive tests of alkaloids, saponins, terpenoids and phenolic compounds in methanol extract; of terpenoids in ethanol extract; and of alkaloids, flavonoids, terpenoids, phenolic compounds and essential oils in chloroform extract. The expression of various phytochemicals and organoleptic features of *Andrographis paniculata* (Burm. f.) Wall. ex Nees whole plant native to Cambodia provide its profiling standardization, which is beneficial for identification and authentication of plant materials, as well as making a monograph of the plant.

INTRODUCTION

Andrographis paniculata (Burm. f.) Wall. ex Nees (Family: Acanthaceae), named "Smav Pramat Monus" in Khmer language, has been widely used for treating sore throat, flu, upper respiratory tract infections, anti-inflammatory, asthma, arthritis, antihypertensive, antipyretic and antithrombotic (Rajalakshmi & Cathrine, 2016). This research aims at analyzing the organoleptic features and phytochemicals constituents of the whole plant of *Andrographis paniculata* (Burm. f.) Wall. ex Nees native to Cambodia.

MATERIALS AND METHODS

Dried whole plant of *Andrographis paniculata* (Burm. f.) Wall. ex Nees was obtained from local plant drugstore and authenticated by University of Puthisastra (UP)-Herbarium (UPFPH-120012). The organoleptic feature was evaluated by means of sense organs such as colour, odour, taste and texture parameters. Dried plant was extracted with three solvents like methanol, ethanol and chloroform. Each extracting yield (%) were calculated and subjected to the evaluation of phytochemical components.

RESULTS AND DISCUSSION



Figure 1. *A. paniculata*

Kingdom: Plantae
Order: Lamiales
Family: Acanthaceae
Genus: *Andrographis*
Species: *paniculata*
Botanical name: *Andrographis paniculata* (Burm. f.) Wall. ex Nees
English name: Green chirayta
Khmer name: Smav Pramat Monus

Table 1: Organoleptic features of *Andrographis paniculata* (Burm. f.) Wall. ex Nees

| Particulars | Stems | Flowers | Leaves |
|-------------|-----------------|-----------------|-----------------|
| Condition | Dried | Dried | Dried |
| Color | Dark green | Violet | Dark green |
| Odour | Characteristic | Characteristic | Characteristic |
| Taste | Strongly bitter | Strongly bitter | Strongly bitter |
| Texture | Slightly coarse | Characteristic | Characteristic |

Table 2: Extracting yields (%) of whole plant of *Andrographis paniculata* (Burm. f.) Wall. ex Nees

| Extracts of Whole Plant of <i>Andrographis paniculata</i> (Burm. f.) Wall. ex Nees | Extracting Yields (%) |
|--|-----------------------|
| Methanol Extract | 10.23 |
| Ethanol Extract | 1.21 |
| Chloroform Extract | 3.30 |

Table 3: Phytochemical analysis of whole plant of *Andrographis paniculata* (Burm. f.) Wall. ex Nees

| Phytochemicals | Chemical Tests | Methanol Extract | Ethanol Extract | Chloroform Extract |
|--------------------|-----------------|------------------|-----------------|--------------------|
| Alkaloid | Mayer | Positive | Negative | Positive |
| | Wagner | Positive | Negative | Positive |
| Saponins | Froth | Positive | Negative | Negative |
| Flavonoids | Ammonium | Negative | Negative | Positive |
| Terpenoids | Salkowski | Positive | Positive | Positive |
| Tanins | Ferric Chloride | Negative | Negative | Negative |
| Phenolic compounds | Ferric Chloride | Positive | Negative | Positive |
| Resins | Turbidity | Negative | Negative | Negative |
| Essential oils | NaOH-HCl | Negative | Negative | Positive |

The phytochemical analysis of methanolic extract of *Andrographis paniculata* (Burm. f.) Wall. ex Nees. revealed the presence of flavonoids, alkaloids, phenols, glycoside, tannins and saponins which is in accordance with our investigation (Sharma *et al.*, 2011). Moreover, The whole plant of the *Andrographis paniculata* (Burm. f.) Wall. ex Nees investigated by Chinnappan (2011) showed similar results to our findings exhibiting the terpenoids in ethanol extract. Lalitha *et al.* (2015) also reported similar findings to our evaluation of *Andrographis paniculata* (Burm. f.) Wall. ex Nees unveiling alkaloids, flavonoids, phenols, terpenoids and essential oils.

CONCLUSION

The result of this preliminary study profiles the scientific information for the proper organoleptic features and the phytoconstituents of different extracts of Cambodian *Andrographis paniculata* (Burm. f.) Wall. ex Nees. These various phytochemicals and organoleptic features of *Andrographis paniculata* (Burm. f.) Wall. ex Nees whole plant provide its profiling standardization, which is beneficial for authentication of plant materials.

REFERENCES

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