COLLECTION, MOLECULAR IDENTIFICATION AND PHYTOCHEMICAL PROFILING OF ETHNOBOTANICALS FROM IMUGAN, STA FE, NUEVA VISCAYA, PHILIPPINES

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# INTRODUCTION

Plants have the ability to synthesize a wide variety of chemical compounds that are used to perform important biological functions. Many of these phytochemicals have beneficial effects on long-term health when consumed by humans, and used to treat human diseases (Cobiac, 2006). With the progress of phytochemical research, many plant constituents have been isolated and identified. It is estimated that new compound are being discovered and described at a rate of one per day (Aguinaldo et al., 2005). Thin-layer chromatography coupled with biological detection can be considered as a high-throughput, inexpensive and reliable procedure for screening plant extracts for the presence of potential drugs (Lukasz, 2015). Furthermore with the increasing questions for the authentication of the source material, it is vital to provide valid information about the authenticity of the plant materials and their potential adulterants.

# Materials and methods

The plant materials were collected at Barangay Imugan, Sta Fe, Nueva Vizcaya, Philippines with the elevation of 1685 meters above sea level. An approved ethical approval and permission letter from the Barangay Captain and from indigent leader was made during the collection. Knowledge on the ethnobotanicals in the area was gathered through group interview/discussion with the locals in the barangay. The leaves were cleaned using fine brush and external moisture was wiped out with clean dry cloth. The genomic DNA was extracted using Isolate II Plant DNA Kit (Biolone, Inc.) and was PCR amplified using ITS and matK markers. The PCR products were sent to 1st BASE Malaysia for sequencing. The sequences were queried on Basic Local Alignment Search Tool to determine the percent similarity and identity to available sequence in the data bases. The secondary metabolites of the plants were determined using thin layer chromatography (Aguinaldo et al., 2005).

**RESULTS AND DISCUSSION**

There are two plants that were collected that are considered ethnobotanicals, it was commonly named by the locals as *Lal-latan* and the other one is *Kamiling.* Based on the amplified ITS region *Lalatan* was identified as *Dendrocnide meyeniana* with the percentage sequence identity of 99%. On the other hand, *Kamiling* was identified using the matK region as *Semecarpus cuneiformis* with percentage sequence identity of 99% (Table 1).

Table 2. Identities of ethnobotanicalsusing MatK and ITS region

|  |  |  |  |
| --- | --- | --- | --- |
| Markers used | Accession No. | Percentage Identity | Identity |
| Matk | AY594479.1 | 99 | *Semecarpus* *cuneiformis* |
| ITS | KM58432.1 | 99 | *Dendrocnide meyeniana* |

Thin layer chromatography experiment on the extract of *Dendrocnide meyeniana* revealed the presents of secondary metabolites such as anthraquinones, anthrones, coumarins, flavonoids, saponins, steroids, tannins and terpenes. On the other hand, the extract of *Semecarpus cuneiformis* found to have alkaloids, athraquinones, anthrones, coumarins, essential oils, indoles, phenols and steroids (Table 2).

Table 1. Phytochemical Profiles of ethnobotanicals from Imugan, Sta Fe, Nueva Vizcaya, Philippines

|  |  |  |
| --- | --- | --- |
| Secondary Metabolites | Extracting Solvent | |
| (Toluene- acetone- chloroform) | |
| *Semecarpus cuneiformis* | *Dendrocnide meyeniana* |
| Alkaloids  Anthraquinones  Anthrones  Cardenolides  Coumarins  Essential oils  Flavonoids  Higher alcohols  Indoles  Phenols  Saponins  Steroids  Tannins  Terpenes | +  +  +  -  +  +  -  +  +  nd  +  -  nd | -  +  +  -  +  nd  +  nd  -  +  +  +  + |

(+) present; (-) absent; (nd); not determine

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