





## Introduction

*Centella asiatica* L. locally known as "thankuni" in Bangladesh belonging to family Apiaceae. It is used as traditional herbal medicine as well as culinary vegetables. In this study, laser desorption ionization Fourier transform ion cyclotron mass spectrometry (LDI FT-ICR MS) is used to identify the secondary metabolites from solid samples (ground powder) of *Centella asiatica* leaves.

# Goals

Development of laser desorption ionization (LDI) technique for detection of secondary metabolite from solid samples.

# Instrumentation and Methods

#### **Chemicals:**

HPLC grade ethanol (Sigma-Aldrich), methanol (J.T. Baker), acetone (Burdick and Jackson), Hexane (Burdick and Jackson), water (J.T. Baker)

### **Sample Extraction:**



Fresh *Centella* asiatica leaves





Ground powder

#### Figure 1: Flow chart for the LDI sample preparation.

Leaves samples also extracted using ethanol, methanol, acetone and hexane. **CALE, CALM, CALA and CALH** is used for *Centella asiatica* Leaves ethanol, methanol, acetone and hexane extracts respectively; CALP: Centella asiatica Leaves dried powder

#### Instruments:



Figure 2: SolariX 2XR FT-ICR mass spectromer

### **Ionization:**

Negative (-) electrospray ionization mass spectrometry (ESI-MS) Negative (-) atmospheric pressure chemical ionization mass spectrometry (APCI-MS) Negative (-) laser desorption ionization mass spectrometry (LDI-MS)

Peak lists were generated based on S/N $\geq$  4 with Data Analysis 4.4 (Bruker Daltonik, Germany). □Mass spectrum ranges from  $m/z \ 100 - 1500.$ □Venn diagram produced with the FunRich 3.1.3. Compound structures were ChemDraw using drawn Professional 15.0.

#### Metabolite Profiling of Centella asiatica L. Leaves using Ultrahigh Resolution Fourier Transform Ion Cyclotron Mass Spectrometry Syful Islam,<sup>1,2</sup> and Sunghwan Kim<sup>1,3\*</sup> American Society for <sup>1</sup>Kyungpook National University, Department of Chemistry, Daegu, 41566, Republic of Korea. Mass Spectrometry <sup>2</sup>Department of Environment, Mushiganj District Office, Munshiganj-1500, Bangladesh. <sup>3</sup>Green-Nano Materials Research Center, Daegu, 41566, Republic of Korea. **Results and Discussion** Table 2: Detected m/z peak of different samples CALE CALA No. of m/zSample CALM CALP 810 459 **LDI Mass Spectrometry** CALP 13830 **Operating Parameters:** Laser power: 60%; laser shots: 300; 13521 15 235 CALE 787 laser frequency: 700 Hz; laser focus: minimum; TOF: 0.5 ms; CALM 447 ion accumulation: 0.25 s. . 1037 CALA Intens. x10<sup>9</sup> CALH 92 1.00 -Figure 8: venn diagram of the overlapping 277.2173 0.75 peaks of CALP, CALE, CALM and CALA. 0.50 -**LDI Tandem Mass Spectrometry** Used to identify the secondary metabolite of CALP 539.1392 0.25 -**Collisional energy**: 0, 5, 10 eV.



Fixing solid sample on double-sided tape on the polished steel plate

