# NEW FINDINGS OF THE DISSERTATION

**Dissertation title**: Study on botanical characteristics, chemical constituents, and biological activities of *Physalis angulata* L., Solanaceae..

**Specialty:** Medicinal Materials - Traditional Pharmacy **Code number**: 9720206

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**Academic institution:** National Institute of Medicinal Materials

Summary of new findings:

**1. Botany**

This study described and analyzed the morphological and anatomical characteristics of stems and leaves, as well as identified the microscopy properties of their powders.

**2. Chemical Components**

- It has been determined that *P. angulata* contains a wide range of organic substances, including flavonoids, carotenes, alkaloids, saponins, coumarins, tannins, organic acids, reducing sugars, amino acids, fats, and polysaccharides.
- Fifteen compounds were isolated and their structures were determined from *P. angulata*, including three phenolic acids (caffeic acid **PA1**, ferulic acid **PA2**, and 3-*O*-caffeoylquinic acid **PA3**), five flavonoids (quercetin **PA4**, quercitrin **PA5**, quercetin 3-*O*-*β*-D-glucopyranoside **PA6**, myricetin 3-*O*-*α*-L-rhamnopyranoside **PA7**, and rutin **PA8**), two sterols (stigmasterol **PA9** and daucosterol **PA10**), four withanolides (physalindicanol A **PA11**, physalindicanol B **PA12**, physalin B **PA13**, and physalin D **PA14**), and one triterpene (oleanolic acid **PA15**). Among them, compounds **PA7** and **PA12** were identified for the first time from *P. angulata*.

**3. Biological Activities**

- This study is the first to evaluate the anti-inflammatory activity of the ethyl acetate extract and physalindicanol A isolated from *P. angulata* in inhibiting the production of PGE2, NO, and IL-1β, as well as reducing the activity of NF-κB in LPS-stimulated RAW 264.7 macrophage cells.

– This research is also the first to investigate the effects of *P. angulata* extracts and withanolides on fatty acid and glucose metabolism via the AMPK pathway in HepG2 cells, and to assess their cytotoxic effects on cancer cell lines (4T1, SNU-1, Hep3B, NTERA-2, and LLC).

*Hanoi, May 3rd 2023*

**THE SCIENTIFIC SUPERVISORS** **Ph.D. CANDIDATE**

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