



**SOCIALIST REPUBLIC OF VIETNAM**  
**Independence – Freedom – Happiness**  
**THE NEW CONTRIBUTIONS OF THE THESIS**

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Thesis title: ***Research on isolation, preparation of standard constituents, and establishment of the analysis process for bioactive compounds***  
Major: Analytical chemistry  
Code: 944.01.18  
Supervisors: Assoc. Prof. Nguyen Dinh Luyen  
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Training facility: University of Science, Hue University  
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**The new contributions of the thesis:**

1) On the basis of investigating the effects of the factors on the isolated process by different methods (thin layer chromatography, column chromatography, prepared chromatography), suitable conditions for the isolation of compounds phyllanthin, hypophyllanthin from *Phyllanthus urinaria*, tanshinone I, cryptotanshinone, tanshinone IIA from *Salvia miltiorrhiza* and eurycomanone from *Eurycoma longifolia* plant with over 95% purity for each substance have been found. The structure of these compounds is determined on the basis of physical data (1H-NMR spectrum, 13C-NMR spectrum, UV-Vis spectrum and ESI-MS mass spectrum).

2) The suitable conditions for liquid chromatography were found to purify the six compounds above and achieve the purity over 99% for each substance and thus, for the first time in our country chemicals that are qualified as standard substances for qualitative and quantitative analysis are prepared.

3) The process of simultaneous analysis of phyllanthin and hypophyllanthin in *Phyllanthus urinaria* and functional foods prepared from that plant has been established; Simultaneous determination of tanshinone I, cryptotanshinone and tanshinone IIA in *Salvia miltiorrhiza* plant samples and determination of eurycomanone in *Eurycoma longifolia* by LC-MS/MS and UPLC-DAD method under appropriate experimental conditions and use of the generated standard is above.

4) Using fractional extraction technique with different solvents, combined with the system of equipment qNMR and HPLC-PDA-HRMS has allowed the recognition of ethyl acetate extraction fraction (AMF-3) from *Annona muricata* as feces. The segment is rich in acetogenin compounds and qualitative analysis of compounds (of the acetogenin group) with biological activity in that segment has been done.

5) Using GC-MS method, for the first time in the world, the compounds present in essential oils obtained from plant parts have been quantified and semi-quantified.

Supervisor *Thua Thien Hue,* 2020  
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