



**Diponegoro University**  
**Faculty of Science and Mathematics**  
**Undergraduate Program Of Chemistry**

Module designation	<b>Traditional Medicinal Chemistry (KOT)</b>
Semester(s) in which the module is taught	5
Person responsible for the module	Dr. Bambang Cahyono Dr. Meiny Suzery
Language	Indonesian
Relation to curriculum	<del>Compulsory</del> / elective / <del>specialisation</del>
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	Face to face : 1 x (2 x 50 min); Structured study: 1 x (2 x 60 min); Self study: 1 x (2 x 60 min)
Credit points	2
Required and recommended prerequisites for joining the module	
Module objectives/intended learning outcomes	<ol style="list-style-type: none"><li>1. S9 Demonstrates an attitude of being responsible for work in his field of expertise independently.</li><li>2. KU1 Able to apply logical, critical, systematic, and innovative thinking in the development or implementation of science and technology that pays attention to and uses humanities values by their field of expertise.</li><li>3. KK2 Able to solve science and technology problems in general and straightforward chemical fields such as identification, analysis, isolation, transformation, and synthesis of micro-molecules through the application of knowledge of structure, properties, kinetics, and energetics of molecules and chemical systems, with analysis and synthesis methods on specific chemical fields, as well as the application of relevant technologies.</li><li>4. PP1 Mastering the theoretical concepts of structure, properties, changes, kinetics, and energetics of molecules and chemical systems, identification, separation, characterization, transformation, synthesis of micromolecular chemicals and their application</li></ol>

## Content

1. Traditional Medicine Development Pattern
  - Definition and History of Traditional Medicine Development
  - Roadmap for traditional medicine development (from upstream to downstream)
  - Several regulations related to traditional medicine in Indonesia
2. Bioactive Compounds commonly found in traditional medicinal raw materials (Part-1)
  - The difference between secondary and primary metabolism and the mechanism by which these materials are formed
  - Characteristics of the structure of monoterpenes, diterpenes, triterpenes, flavonoids (phenolics) and alkaloids
3. Bioactive Compounds commonly found in traditional medicinal raw materials (Part-2)
  - Chemotaxonomy in traditional medicine
  - Rapid test for the presence of bioactive compounds in plants
4. Standardization of Traditional Medicine (Part-1)
  - Several standards for traditional medicinal commodities (SNI, Indonesian Herbal Pharmacopoeia, other Minister of Health Regulations)
  - Several methods and examples of the results of the physical (organoleptic) analysis
5. Standardization of Traditional Medicine (Part-2)
  - Some examples and results of chemical analysis
  - Some examples and results of microbiological analysis
  - How to Validate the test method
6. Enzymatic mechanism: relation of chemical structure in healing/inhibition of selected diseases (Part-1)
  - Examples of the mechanism of tumor development and natural bioactive compounds that can inhibit its development
  - An example of the mechanism of increasing cholesterol levels (hypoglycemia) and its healing mechanism through the use of natural bioactive compounds
7. Enzymatic mechanisms: chemical structure relationships in the cure/inhibition of selected diseases (Part-2)
  - An example of the mechanism of increasing cholesterol levels (hypoglycemia) and its healing mechanism through the use of natural bioactive compounds
8. Extraction, dosage calculation and formulation of traditional medicine (Part-1)
  - Various ways of preparing extract
  - Conversion from animal to human and vice versa
9. Extraction, dosage calculation and formulation of traditional medicine (Part-2)

	<ul style="list-style-type: none"> <li>• Traditional medicine formulas: introduction to ingredients and their selection</li> </ul> <p>10. Student inventions (Part-1)</p> <ul style="list-style-type: none"> <li>- New Formula of Traditional Medicine</li> </ul> <p>11. Student inventions (Part-2)</p> <ul style="list-style-type: none"> <li>- New Formula of Traditional Medicine</li> </ul> <p>12. Patents and other intellectual property in traditional medicine</p> <ul style="list-style-type: none"> <li>• Types of intellectual property</li> <li>• How to search for patents and drafting</li> </ul>
Exams and assessment formats	Mid-Semester Exam and Final Exam
Study and examination requirements	<p>Participatory Activities 20%</p> <p>Project Results 30%</p> <p>Task 10%</p> <p>Quiz 10%</p> <p>Mid-semester 15%</p> <p>Final exams 15%</p>
Reading list	<ol style="list-style-type: none"> <li>1. B. Cahyono dan M. Suzery. 2019. Modul I. Peran Ilmu Kimia dalam Pengembangan Obat Tradisional: Ruang Lingkup dan Pola Pengembangan</li> <li>2. B. Cahyono dan M. Suzery. 2019. Modul II. Khemotaxonomi: Kekhasan struktur dari senyawa bioaktif dalam obat tradisional</li> <li>3. B. Cahyono dan M. Suzery. 2019. Modul III. Dari uji invitro hingga ke uji klinis, apa yang harus kita lakukan?</li> <li>4. B. Cahyono dan M. Suzery. 2019. Modul IV. Metode konvensional dan modern dalam analisis obat tradisional</li> <li>5. B. Cahyono dan M. Suzery. 2019. Modul V. Mekanisme penatalaksanaan penyakit dengan obat tradisional</li> <li>6. B. Cahyono dan M. Suzery. 2019. Modul VI. Penyediaan ekstrak, formulasi dan konversi dosis dan formulasi</li> <li>7. B. Cahyono dan M. Suzery. 2019. Modul VII. Cara praktis searching dan drafting patent obat tradisional</li> <li>8. B. Cahyono dan M. Suzery, (2018), Pemisahan Bahan Alam Organik, Kompas Ilmu, Jakarta</li> </ol>