PHYTOCHEMICALS OF MEDICINAL PLANTS (MD04600304)

Course offering faculty : Faculty of Medicine
Course coordinator : Dr. Ade Arsianti, S.Si., M.Si.
Online course platform link : https://emas.ui.ac.id/course/view.php?id=15458
Prerequisites : None
Language of Instruction : English
Course date : 6 September 2021 – 1 October 2021
Course description :

This elective module provides the basic phytochemistry of plants that have the potential to be
develop as medicine. The subject of this elective module includes active compounds or constituents of
plants that are able to be developed as medicine as well as the search for new bioactive compounds from
plants. This module also includes discussions on phytochemical compounds in plants that have the
potential to be medicinal, the basic principles of plants that have the potential as medicine, the physical
properties and chemical properties of active compounds, and the activity of compounds from plants as
antihistamines, antibacterials, anticancers, antifungals, antihypertensives, antiprotozoals, antivirals,
antispasmodials, and immunostimulants. In addition, this module discusses the principle of preparation of
compounds from plants and their testing in vitro and in vivo. From all the subjects studied, it is expected
that students can have knowledge on the rational basis of medicinal plant use, furthermore can explore
the benefits obtained from medicinal plants in the discovery of new drugs

Course objective :

Students are able to identify the presence of bioactive compounds and the solubility of medicinal
plant compounds, explain about herbal medicine dosage forms, as well as explain about several in silico,
in vitro, and in vivo bioactive tests of medicinal plants

Course topics and subtopics :

1. Classification of medicinal plant compounds
   • Flavonoid
   • Alkaloid
   • Terpenoid
   • Glicoside
   • Steroid
2. Medicinal plant extraction and purification
   • Principle of extraction and purification
   • Extraction and purification methods
3. Compound’s solubility in medicinal plant extraction
4. Identification of medicinal plant compounds
   - Qualitative methods
   - Quantitative methods
5. Bioactivities of medicinal plant compounds
   - Antioxidant
   - Antiinflammation
   - Antidiabetic
   - Anticancer
   - Antimicrobial
6. Herbal medicine dosage forms
   - Classification of herbal medicine in Indonesia
   - Herbal medicine dosage forms
   - Formulation of Herbal medicine dosage forms
7. In silico assay of herbal medicine compounds
8. In vitro assay of herbal medicine
   - Cell types for *in vitro* assay
   - Cytotoxicity test using *in vitro* assay
9. In vivo assay of herbal medicine
   - Principle of *in vivo* assay using animal
   - Animal model for *in vivo* assay

**Teaching and learning techniques** :

<table>
<thead>
<tr>
<th>No</th>
<th>Activities</th>
<th>Methods</th>
<th>Platform</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interactive lectures and Practical laboratory</td>
<td>Synchronous</td>
<td>Zoom / Ms. Teams</td>
<td>Lecture or practical laboratory use a video conference-based platform (Microsoft Team, Zoom) and materials / presentations (ppt slides) can be uploaded in advance on the EMAS platform.</td>
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<td>Asynchronous</td>
<td>EMAS</td>
<td>Lecture or practical laboratory materials (videos) are uploaded on the EMAS platform (emas.ui.ac.id) before the class schedule. The question and answer session is carried out according to the class schedule using the Zoom / Ms. Teams and EMAS.</td>
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<td>2</td>
<td>PBL</td>
<td>Synchronous / Asynchronous</td>
<td>Determined by facilitator and</td>
<td>The Module Team gives the facilitator to determine the desired method and platform based on an</td>
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<td>students (EMAS, Ms. Team, Zoom, Whatsapp, line)</td>
<td>Agreement with the student group, with the following conditions:</td>
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<td>3</td>
<td>Plenary</td>
<td>Synchronous</td>
<td>Zoom</td>
<td>The plenary will be held in synchronous with the Zoom platform. The plenary session will be guided by the lecturers.</td>
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**Evaluation**:

- Last-term test: 40%
- Discussion: 10%
- Presentation: 10%
- Practical laboratory: 10%
- Project Manuscript: 30%

**References**:

