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Kampus Sidotopo : Jl. Barito 1 No.2, Magelang Utara, Kota Magelang, Jawa Tengah

Email: [jtoi@untidar.ac.id](mailto:jtoi@untidar.ac.id)

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## EDITORIAL

Peneliti dan Pencinta tumbuhan obat di Indonesia yang berbahagia,

Indonesia dikaruniai keberlimpahan biodiversitas tumbuhan. Dari sekitar 30.000 spesies tumbuhan, 7.000 di antaranya dimanfaatkan oleh masyarakat. Sejarah panjang menunjukkan bahwa tumbuhan yang dimanfaatkan sebagai obat memiliki peran dalam merawat kesehatan masyarakat, utamanya bagi warga yang bertempat tinggal jauh dari akses kesehatan formal. Namun, keterbatasan eksplorasi tumbuhan berkhasiat obat dari aspek keselamatan, kemanfaatan, dan mutu masih menjadi pembatas penggunaan tumbuhan obat dalam pelayanan kesehatan formal. Oleh karena itu, jurnal tumbuhan obat Indonesia (JTOI) diterbitkan untuk mengeksplorasi, mengembangkan, dan mendiseminasikan pemahaman tentang kekayaan flora Indonesia dan potensi pemanfaatannya sebagai alternatif perawatan kesehatan. Melalui kerja sama konstruktif lintas disiplin ilmu-ilmu botani, farmakologi, etnobotani, pengobat tradisional, klinisi, budidaya, dan peneliti bidang terkait lainnya, kami memublikasi artikel tentang biodiversitas tumbuhan obat dan kearifan lokal berdasarkan pendekatan penelitian.

Jurnal TOI volume 16 nomor 2 yang diterbitkan oleh Fakultas Pertanian Universitas Tidar ini merupakan kelanjutan dari terbitan sebelumnya. Jurnal yang terbit 2 kali setahun ini pada awalnya dikelola oleh balai besar pengembangan tanaman obat dan obat tradisional (B2P2TOOT) Tawangmangu yang bernaung di bawah badan penelitian dan pengembangan kesehatan (Balitbangkes) kemudian dialihkelolakan pada Fakultas Pertanian Universitas Tidar.

Jurnal TOI volume 16 nomor 2 menerbitkan 7 artikel mengenai riset etnomedisin hingga studi pra-klinik untuk mengevaluasi beberapa aktivitas farmakologi. Artikel pertama adalah Profil Morfologi dan Anatomi dari Daun Beluntas (*Pluchea indica*) serta Perbedaan Profil Kandungan Kimia dari Daun Beluntas pada Kondisi Geografis yang Berbeda. Artikel kedua berjudul Penggunaan Jamu pada Kasus Covid-19 Gejala Ringan di Salah Satu Griya Sehat Jakarta (Studi Pendahuluan). Berikutnya adalah Sitotoksitas dan Selektivitas Fraksi Ekstrak Kulit Kayu Batang Simpupur Air (*Dillenia suffruticosa*) Terhadap Sel Kanker, *Medicinal Plants Used for Antihypercholesterolemia in Ethnic Groups of Celebes Island, Indonesia*; Karakterisasi dan Identifikasi Senyawa Bioaktif Ekstrak Daun Rumput Kebar (*Biophytum petersianum* Klotzsch); Kajian Empiris dan Etnofarmasi Tumbuhan Hutan Berkhasiat Obat Asal Desa Adat Tenganan Pegringsingan Karangasem Bali Sebagai Antinyeri dan Antiinflamasi, dan artikel terakhir berjudul Optimasi Formula *Nanohydrogel* Icariin Sebagai Afrodisiak.

Untuk merawat, menjaga kesinambungan, serta meningkatkan isi jurnal ini, kami mengundang Bapak/Ibu untuk menyampaikan artikel hasil kajian, *review*, atau studi kasus untuk pengembangan ilmu tumbuhan obat. Kami mengharapkan artikel yang dimuat di jurnal ini meliputi aspek tumbuhan obat Indonesia, termasuk namun tetap tidak terbatas pada topik berikut:

- **Penelitian Botani:** Identifikasi, klasifikasi, dan karakterisasi tumbuhan obat yang ada di Indonesia, serta studi tentang ekologi dan habitatnya;
- **Aspek Farmakologi:** Penelitian tentang senyawa aktif dan mekanisme aksi tumbuhan obat, serta potensi aplikasi dalam pengobatan dan pencegahan penyakit;
- **Etnobotani dan Kearifan Lokal:** Penelitian tentang penggunaan tradisional tumbuhan obat dalam beragam budaya di Indonesia;

- **Pengembangan Produk Herbal:** Inovasi dalam ekstraksi, formulasi, dan pengolahan produk herbal yang ramah lingkungan dan efektif;
- **Konservasi dan Keberlanjutan:** Upaya untuk melestarikan keanekaragaman hayati tumbuhan obat dan mengembangkan praktik pengelolaan yang berkelanjutan;
- **Studi Pra-klinik dan Klinik:** Uji klinis dan penelitian terkait yang menilai efektivitas dan keamanan penggunaan tumbuhan obat dalam pengobatan modern.

Kami meyakini berkembangnya ilmu pengetahuan akan ditentukan oleh penelitian yang memiliki kaidah baku dan bermutu. Oleh karena itu, setiap artikel yang diterbitkan dalam jurnal ini akan melalui proses *review* terukur oleh para ahli di bidangnya. Kami mengedepankan untuk menerbitkan karya-karya yang otentik, orisinal, berkualitas, dan berkontribusi positif bagi perkembangan ilmu tumbuhan obat di Indonesia.

Jurnal Tumbuhan Obat Indonesia adalah jurnal dengan akses terbuka untuk memastikan bahwa pengetahuan yang disajikan dapat diakses secara luas oleh para peneliti, praktisi medis, akademisi, dan masyarakat umum. Kami berharap jurnal ini mampu menyumbang dan mendorong penelitian, inovasi, dan pemanfaatan tumbuhan obat Indonesia.

Terima kasih atas dukungan dan kerja sama Ibu/Bapak dalam untuk merawat kekayaan alam Indonesia dan mengoptimalkan potensi tumbuhan obat bagi peningkatan derajat kesehatan dan kesejahteraan bersama.

Salam,

Dewan Redaksi JTOI



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## DAFTAR ISI

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## ***Morphology Profile and Anatomy of Beluntas Leaves (*Pluchea indica*) and Differences in The Chemical Content Profile of Beluntas Leaves in Different Geographical Conditions***

**Henry K. Setiawan<sup>1</sup>, Sumi Wijaya<sup>1</sup>**

<sup>1</sup>Fakultas Farmasi Universitas Katolik Widya  
Mandala Surabaya, Jl. Kalisari Selatan No. 1.  
Surabaya 60112, Indonesia  
\*e-mail: sumi@ukwms.ac.id

### **ABSTRACT**

*Beluntas (*Pluchea indica*), is one of species in Asteraceae family, traditionally used to increase appetite, to treat indigestion, rheumatism and body odor problems. This research aims to provide a morphological and anatomical profile of Beluntas leaves, determining qualitative and quantitative differences in the chemical content of Beluntas leaves obtained from three regions with different geographical conditions. Qualitative determination is carried out through phytochemical screening tests, while quantitative determination is carried out through the total amount of flavonoids, polyphenols and alkaloids. The observation results showed Beluntas leaves are an oval leaf shape with pinnate leaf reinforcement. Anatomical observation of the leaves, found that the leaf type is equifacial with collateral vascular bundles, the presence of non glandular multicellular trichomes with constricted in the cross wall, papillae and glandular Compositae trichomes. Qualitative tests to determine chemical content showed that there was no difference in the chemical content of Beluntas leaves obtained from three areas with different geographical conditions, where Beluntas leaves contain polyphenols, saponins, alkaloids, flavonoids, steroids and essential oils. Quantitative determination showed the highest results of total polyphenols and flavonoids, namely 7.7% w/w and 1.2% w/w, respectively obtained from areas with the lowest rainfall and altitude from the three areas with alluvial and gramosol soil types. The highest total alkaloid results (0.08% w/w) were obtained from the area with the the highest rainfall and altitude from the three areas with andosol, lambusol, latosol and alluvial soil types.*

**Keywords:** *Beluntas, morphology, anatomy, chemical contents, kondisi geografis*

## ***The Utilization of Jamu in Treating Mild Covid-19 Symptoms at a Griya Sehat in Jakarta (Preliminary Studies)***

**Lucie Widowati<sup>1</sup>, Delima<sup>2</sup>, Willy Japaris<sup>3</sup>**

<sup>1</sup>Pusat Riset Bahan Baku Obat dan Obat Tradisional, BRIN

<sup>2</sup> Pusat Riset Kedokteran Preklinis dan Klinis, BRIN

<sup>3</sup> PP KESTRAKI

(email: [luci003@brin.go.id](mailto:luci003@brin.go.id);  
[Deli004@brin.go.id@yahoo.com](mailto:Deli004@brin.go.id@yahoo.com);  
[japariesw@yahoo.com](mailto:japariesw@yahoo.com))

### **ABSTRACT**

*In the COVID-19 pandemic situation, herbal medicine is quite widely used by people. This study aimed to assess the description of the handling of mild cases of COVID-19 clients using herbal ingredients, which was carried out at a Traditional Health Care Center in Jakarta. The method used was descriptive research with retrospective case study design on mild COVID-19 cases using or being treated with traditional Indonesian herbal medicine, using secondary data from medical records from 30 COVID-19 clients who had COVID-19 status based on PCR examination. The result showed that there were 7 types of herbs given either as a single herb or a combination of them. Most of the ingredients used were sambiloto capsules and Jamu B concoction (turmeric, javanese ginger, aromatic ginger, red zinger). After drinking the potions, 21 clients were symptom free on day 14, 2 clients were symptom free on days 5 and 7 and were noted to have a habit of drinking jamu for physical fitness. Cumulatively, all clients were symptom free on day 23 with stable condition in 8 clients (26.7%) and 22 clients (73.3%) stated that they were getting better. The most cases of transmission of COVID-19 to people around them were 5 clients who infected 5 people. All infected people have mild/asymptomatic COVID-19. It can be concluded that herbal medicine has the potential to be used for COVID-19 clients with mild/asymptomatic complaints, and the habit of drinking herbal concoctions for fitness*



*can shorten the day of symptom relief compared to those who do not drink herbal medicine before getting sick.*

**Keywords:** COVID-19, griya sehat, herbal medicine, benefits

### ***Cytotoxicity and Selectivity of Simpur Air (*Dillenia suffruticosa*) Wood Bark Extract Fractions Against Cancer Cells***

**Saparina Rahma<sup>1)</sup>, Masriani<sup>1\*)</sup>, Rahmat Rasmawan<sup>1)</sup> Rini Muharini<sup>1)</sup> Rody Putra Sartika<sup>1)</sup>**

<sup>1</sup> Program Studi Pendidikan Kimia, Universitas Tanjungpura, Jalan Prof. Dr. H. Hadari Nawawi, Indonesia

\*e-mail: [masriani@fkip.untan.ac.id](mailto:masriani@fkip.untan.ac.id)

#### **ABSTRACT**

Liver, colon, and cervical cancer are the top three types of cancer which rank in the top five worldwide in terms of incidence and mortality. *Simpur air* plant (*Dillenia suffruticosa*) has been traditionally used for the treatment of various diseases, one of which is cancer. This study aims to prove cytotoxic effect and selectivity of *simpur air* wood bark fractions against liver HepG2, colon WiDr, and cervical HeLa cancer cells. *Simpur air* wood bark is macerated using 96% methanol. The methanolic crude extract was fractionated with the liquid-liquid partition method using *n*-hexane and ethyl acetate. Cytotoxicity test using MTT assay method. The result showed that the methanol extract, *n*-hexane fraction, ethyl acetate fraction, and methanol fraction in liver HepG2 cancer cells had  $IC_{50}$  values  $179,32 \pm 13,55$ ;  $85,14 \pm 8,58$ ;  $140,08 \pm 22,63$ ;  $\geq 500 \mu\text{g/mL}$  and in colon WiDr cancer cells had  $IC_{50}$  values  $133,02 \pm 27,64$ ;  $41,54 \pm 37,58$ ;  $124,76 \pm 17,22$ ;  $\geq 500 \mu\text{g/mL}$ . Meanwhile, all fractions had  $IC_{50}$  values  $\geq 500 \mu\text{g/mL}$  in HeLa cervical cancer cells. The Selectivity Index value shows that only the *n*-hexane fraction in WiDr cancer cells has a Selectivity Index value  $\geq 3$ , while the other extracts and fractions are  $\leq 3$ . Thus, the *n*-hexane fraction in WiDr cancer cells has the potential to be developed as a drug candidate anticancer.

**Keywords:** *Dillenia suffruticosa*, selectivity, cytotoxicity, cancer cells

### ***Medicinal Plants Used for Antihypercholesterolemia in Ethnic Groups of Celebes Island, Indonesia***

**Nuning Rahmawati<sup>1\*)</sup>, Ika Yanti Marfuatush Sholikhah<sup>1)</sup>, Dyah Subositi<sup>1)</sup>, Harto Widodo<sup>1)</sup>, Rohmat Mujahid<sup>1)</sup>, Sari Haryanti<sup>1)</sup>, Yuli Widiyastuti<sup>1)</sup>**

<sup>1</sup> Research Center for Pharmaceutical Ingredients and Traditional Medicine, National Research and Innovation Agency, Jl Raya Lawu, 11, Tawangmangu 57792, Central Java, Indonesia

\*e-mail: [nunrahmawati@gmail.com](mailto:nunrahmawati@gmail.com)

#### **ABSTRACT**

This study aimed to identify the utilization of medicinal plants used by selected traditional healers who met inclusion criteria to treat high cholesterol levels in ethnic groups of Celebes Island, Indonesia. Data collection was carried out through interviews, observation, and sample collection. This study revealed 67 concoction information and identified the use of 48 plant species distributed in 32 families among 39 healers in 20 ethnic groups in Celebes Island. *Peperomia pellucida* (L.) Kunth (UV=0.21), lamiaceae (15.63%), and leaves (57.35%) were determined as the most prominent species, family, and plant part used. The most widely prescribed rule of use is internal administration (94.03%) with a frequency of 3x1 per day (44.78%) for a week to a month (56.72%). However, conservation efforts must be initiated immediately since more than 50% of healers have yet to cultivate efforts.

**Keywords:** *Peperomia pellucida*, Folk medicine, Local knowledge





***Characterization and Identification  
of Bioactive Compounds of Kebar  
Grass (*Biophytum petersianum*  
Klotzsch) Leaves Extracts***

**Meike Meilan Lisangan<sup>1)</sup>, Gino Nemesio  
Cepeda<sup>1\*)</sup>, Mathelda Kurniaty Roreng<sup>1)</sup>,  
John Frangko Rumayomi<sup>2)</sup>**

<sup>1</sup>Jurusan Teknologi Pertanian, Universitas  
Papua, Jl. Gunung Salju Amban,  
Manokwari, Papua Barat, Indonesia

<sup>2</sup> Alumni Jurusan Teknologi Pertanian,  
Universitas Papua, Jl. Gunung Salju Amban,  
Manokwari, Papua Barat, Indonesia

\*e-mail: ginocepeda.gc@gmail.com

**ABSTRACT**

*Medicinal plant has capacity to produce bioactive compound that is benefit for human health. Kebar grass is a medicinal plant that was used to enhance vitality and fertility for woman, to heal sprue, fever, arthritis and malaria. The objectives of the study were to characterize and identify the compounds in the etanolic extract of kebar grass leaves as potential source of bioactive compounds in biopharmacy. Extraction process was done by maseration using ethanol in room temperature. Characterization of extract was done for its rendemen, color and consistency. Bioactive compounds of kebar grass leaves extract were determined using qualitative and quantitative method. Qualitative assays were done for phenol, flavonoid, saponine, steroid and alkaloid while quantitative assay using gas chromatography mass spectroscopy (GCMS). Results indicated that etanolic extract of kebar grass leaves had rendemen of 7,03%, color of dark green and consistency of oily paste. Qualitatively assays indicated that extract positively contain phenol, flavonoid, saponine, steroid and alkaloid. Quantitative assay using GCMS showed that ethanolic extract of kebar grass leaves composed by 16 bioactive compounds. The major compounds were 6,9-Pentadecadiene-1-ol in concentration of 29,79%, palmitic acid 22,82% and neophytadiene 8,06%. Kebar grass leaves extract is potential as source of bioactive compounds for biopharmacy industry.*

**Keywords:** *bioactive compounds, ethanolic extract, *Biophytum petersianum**

***Empirical and Ethnopharmacology  
Studies of Forest Plants with  
Medicinal Efficacy from the  
Traditional Village of Tenganan  
Pegringsingan Karangasem Bali as  
Pain Relief and Anti-Inflammation***

**Ni Luh Kade Arman Anita Dewi<sup>1\*)</sup>, Gusti  
Ayu Putri Cantika Dewi<sup>1)</sup>, Fitria Megawati<sup>3)</sup>,  
Putu Era Sandhi Kusuma Yuda<sup>4)</sup>**

Fakultas Farmasi Universitas Mahasaraswati  
Denpasar, Jalan Kamboja No.11a Denpasar,  
80233 Indonesia

\*e-mail: [armannita@unmas.ac.id](mailto:armannita@unmas.ac.id)

**ABSTRACT**

*Ethnopharmacy is a multidisciplinary science that links pharmaceutical science with community cultural customs which consist of drugs and ways to use natural ingredients for treatment based on the characteristics of an ethnic community in an area in Tenganan Pegringsingan Karangasem Traditional Village in the treatment of pain and inflammation. The purpose of this study was to determine the utilization of medicinal plants and their parts, processing methods, methods of use used in the treatment of pain and inflammation as well as knowing the usability index and fidelity level (FL) of plants resulting from ethnopharmacy studies and knowing the potential of other plants in the Tenganan Traditional Village Forest. Karangasem Pegringsingan. This research was conducted using a survey/observational method and the selection of respondents was by snowball sampling, namely looking for respondents who were considered to have knowledge of traditional medicine. Qualitative research was used with the method of interviews and presentation of data and for quantitative with the usability index. In this study, the independent variable was used, namely an ethnopharmaceutical study as a treatment for pain and inflammation in the Tenganan Pegringsingan Karangasem Traditional Village Forest. The data collection process was carried out by direct observation, namely observing, listening, taking notes and learning from sources. Calculation of results is done with the formula Use value (UV) and Fidelity Level (FL). Based on the results of the interviews conducted with the two interviewees who met the inclusion criteria, the interview results obtained with 12 types of*



medicinal plants used by the interviewees as a treatment for pain and inflammation. There are 26 types of medicinal plants originating from customary village forests which are not used by sources in medicine but these plants have efficacy in the treatment of pain and inflammation. The plants came from the Tenganan Pegringsingan Karangasem Traditional Village Forest and came from around the yard of the informant.

**Keywords:** ethnopharmacy, inflammation, pain, medicinal plants

### **Optimization of Icariin Nanohydrogel Formula as an Aphrodisiac**

**Tatang Tajudin\*<sup>1)</sup>, Septiana Indratmoko<sup>2)</sup>, Adecya Nur Prawatya<sup>3)</sup>**

<sup>1,2,3</sup>Universitas Al-Irsyad Cilacap, Indonesia  
email: [tatang.tajudin@yahoo.co.id](mailto:tatang.tajudin@yahoo.co.id)

#### **ABSTRACT**

Decreased sexual desire is a type of sexual dysfunction that is common in men. Sexual dysfunction can be controlled by using herbs that have activity as aphrodisiacs. Many herbs are efficacious as aphrodisiacs, one of which is the icariin compound from the epimedium plant. However, the use of oral drugs must go through absorption and distribution processes to cause pharmacological effects, besides that the first pass effect that occurs in the liver reduces the bioavailability of the drug. This study aims to optimize the icariin nanohydrogel formula for use as a topical aphrodisiac, preparation characteristics, and the effect of nanohydrogel on the diffusion of icariin compounds. Formula optimization was carried out using the Simplex Lattice Design (SLD) method with variations of carbopol, HPMC and TEA. Quantitative data analysis of aphrodisiac activity was analyzed by One Sample T-Test. The optimal formulation is obtained at a ratio of 1.415 (carbopol) : 2.168 (HPMC) : 1.208 (TEA), resulting in a clear, cucumber fish oil-scented preparation that is stable, with a viscosity of 19753.3 cps and an adhesive force of 0.387 seconds, pH 6.1, as well as a spreading power with a diameter of 5.56 cm. The hedonic test conducted on 4 formulas with the addition of fragrance shows that formula 3 is preferred by the respondents, followed by formula 4, formula 2, and formula 1. The cumulative

amount of the penetrated preparation is 0,174  $\mu\text{g}/\text{cm}^2$  at 10 minutes, 0,283  $\mu\text{g}/\text{cm}^2$  at 15 minutes, 0,398  $\mu\text{g}/\text{cm}^2$  at 30 minutes, 0,498  $\mu\text{g}/\text{cm}^2$  at 60 minutes, and 0,603  $\mu\text{g}/\text{cm}^2$  at 120 minutes. Conclusion: The combination of carbopol, HPMC and TEA in making icariin nanohydrogel produces an optimal formula with a ratio of carbopol: HPMC: TEA, namely 20.7439: 58.4047: 20.8513. The optimum formula produces icariin nanohydrogel preparations that are clear, have the smell of bottlefish oil and are stable, with a viscosity of 19753.3 cps and an adhesive force of 0.387 seconds. The icariin nanohydrogel has a pH of 6.18 and spreadability with a diameter of 5.56 cm.

**Keywords:** Formula optimization, icariin, aphrodisiac