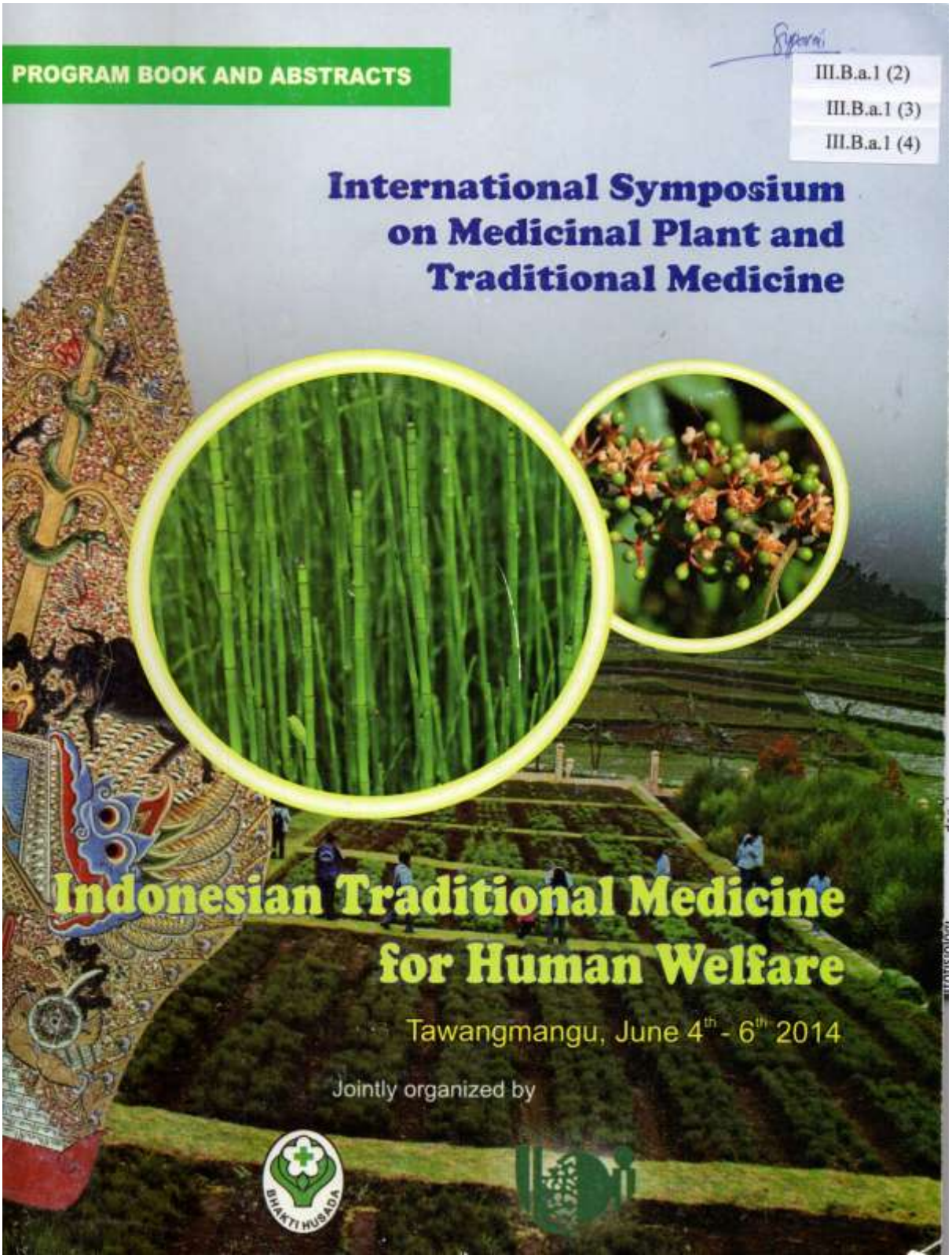
PROGRAM BOOK AND ABSTRACTS
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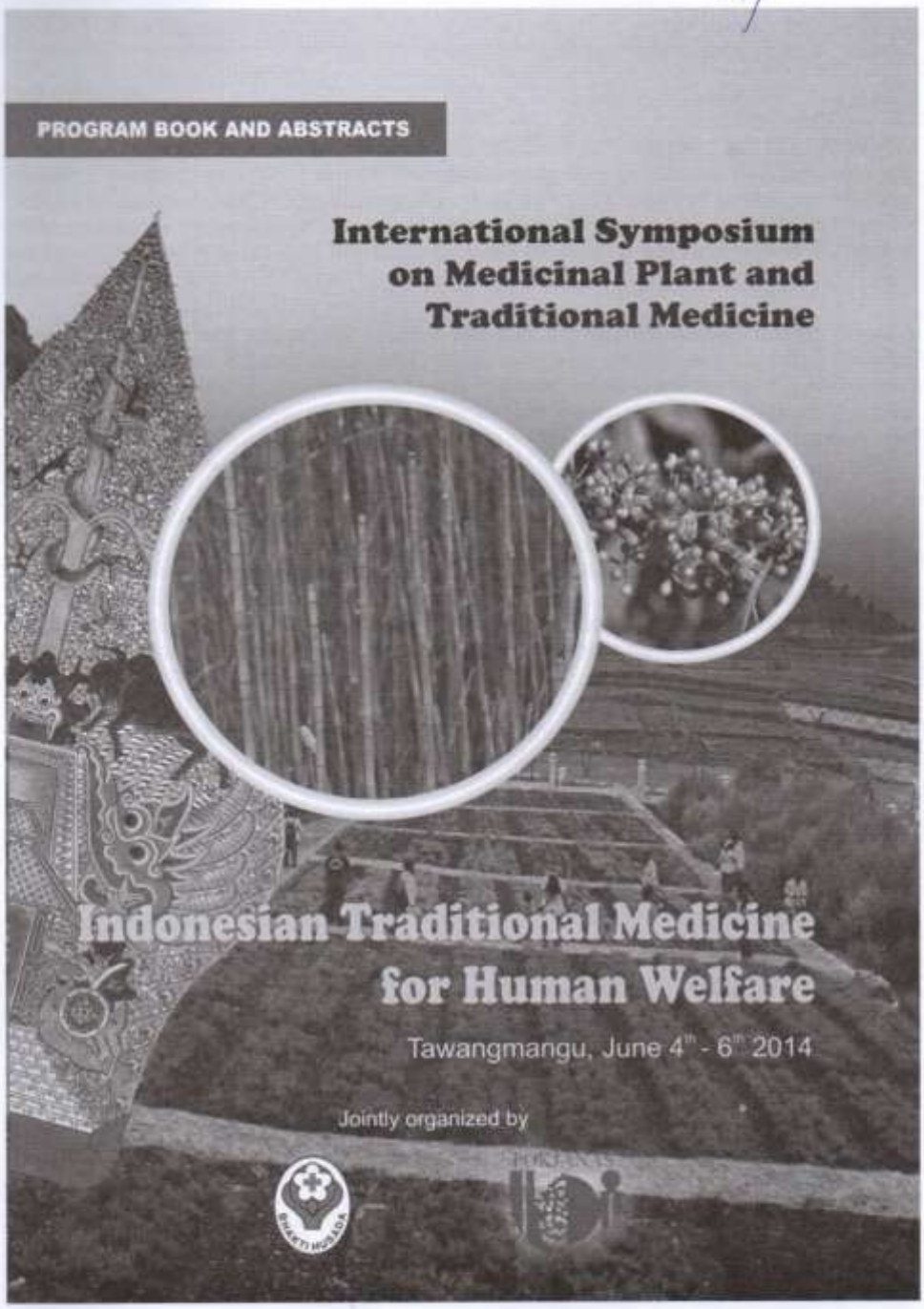
International Symposium on Medicinal Plant and Traditional Medicine
Indonesian Traditional Medicine for Human Welfare
Tawangmangu, June 4th - 6th 2014
Jointly organized by
BHAKTI HUSADA


PROGRAM BOOK AND ABSTRACTS
International Symposium on Medicinal Plant and Traditional Medicine
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PREFACE

Dear Colleagues,

On behalf of the organizing committee, we would like to express our great honor and pleasure for your attendance and your active participation on "International Symposium of Medicinal Plant and Traditional Medicine for Human Welfare" held in Tawangmangu, June, 4-6th, 2014, organized by Medicinal Plant and Traditional Medicine Research and Development Center (MPTMRDC), National Institute of Health Research and Development, Ministry of Health Republic of Indonesia collaborating with National Working Group of Indonesia Medicinal Plant.

We were honored to have eight keynote speakers both from Indonesia and overseas who are playing a leading role in the frontline of each research field. In this symposium, we particularly focused on medicinal plant and traditional medicine with *Litsea cubeba* and *Equisetum debile* as specific topics. It was a great success to provide the excellent opportunity to discuss how medicinal plant and traditional medicine contributes for human welfare. All accepted articles will be published in the proceeding of symposium after reviewed by competent reviewers.

Ministry of Health, Republic of Indonesia through "Saintifikasi Jamu" program aimed to provide scientific evidence based of Jamu efficacy and safety for utilization in health services. In order to support that program, research and development of medicinal plant and traditional medicinal especially Jamu, from upstream to downstrean by collaboration among research institutes, universities and all stakeholders absolutely needed. In this symposium, the distinguished invited speakers will present their latest findings regarding the symposium theme, and we hope that the participants will enthusiastically discuss the newly raised research and clinical questions with the leading experts.

We hope you will have an excellent opportunity to acquire advanced knowledge and information of medicinal plant and traditional medicine and to strengthen mutual friendship during the symposium.

Sincerely yours,

Organizing Committee

LIST OF PARTICIPANTS AND ABSTRACT'S CODE

No.	NAME	INSTITUTION	E-MAIL	CODE	PAGE
1.	Afifah B. Sutjiatmo	Faculty of Pharmacy, Universitas Jenderal Achmad Yani, Bandung, Indonesia	fifahbs@yahoo.com	P-PMP-024	112
2.	Afrillia Nuryanti Garmana	School of Pharmacy, Bandung Institute of Technology Jl. Ganesa No.10 Bandung, Indonesia	afrillia@fa.itb.ac.id	P-PMP-006	103
3.	Agus Triyono	Medicinal Plant and Traditional Medicine R&D (MPTMRDC) Tawangmangu, Indonesia	agustriyono_21@yahoo.com	O-PMP-019	81
4.	Ahmad Musir	Faculty of Pharmacy, Pancasila University, Jagakarsa-Jakarta 12640, Indonesia	musirkosam@yahoo.com	P-MPP-004	96
5.	Alamsyari	Graduate School of Bogor Agricultural University, Nutrition and Feed Science Study Program, Bogor, Indonesia	emiedwierra@yahoo.com	P-PMP-014	107
6.	Alasen Milala Sembiring	Faculty of Pharmacy, University of Surabaya, Indonesia	alasen2004@yahoo.com	O-MBM-012	88
7.	Aminnudin A.	Dept. of Chemistry, Faculty of Science & Technology, Islamic State Univ. Maulana Malik Ibrahim, Malang, Indonesia	tomenasyik@gmail.com	P-MBM-011	120
8.	Andianto	Center of Forestry Engineering and Forest Product Processing Research and Development, Indonesia	andiant068@yahoo.co.id	O-MPB-001	54
9.	Anggit Listyacahyani S.	Faculty of Pharmacy, Gadjah Mada University, Yogyakarta, Indonesia	a.sunarwidhi@gmail.com	O-PMP-008	75
10.	Anif Nur Artanti	CCRC, Faculty of Pharmacy, Universitas Gadjah Mada Yogyakarta, Indonesia	meiyan_e@yahoo.com	O-MBM-007	86
11.	Anni Putri Hanifa	South Sulawesi Assessment Institute for Agricultural Technology, Indonesia	anni.putri@gmail.com	O-MPB-011	59
12.	Arwansyah	Department of Biochemistry, Bogor Agricultural University, Indonesia	sumaryada@gmail.com	O-MPP--003	63
13.	Asep Sukohar	Dept. of Pharmacology and Therapy, Medical Faculty of Lampung University, Lampung, Indonesia	asepsukohar@gmail.com	O-PMP-014	78
14.	Asnal Fatati	Dept. Chemistry of Sains and Technology Faculty, UIN Maulana Malik Ibrahim Malang, Indonesia	asnalelmuzammil@gmail.com	O-MBM-014	89
15.	Atina Hussaana	Bagian Farmakologi Fakultas Kedokteran Unissula, Semarang, Indonesia	atinahussaana@yahoo.com	O-MBM-015	90

No.	NAME	INSTITUTION	E-MAIL	CODE	PAGE
16.	Broto Santoso	Faculty of Pharmacy Universitas Muhammadiyah Surakarta, Indonesia	Broto.Santoso@ums.ac.id	P-MPP-010	99
17.	Christian Hendrik	Faculty of Medicine Maranatha Christian University, Bandung, Indonesia	evawira49@yahoo.com	P-PMP-008	104
18.	Cikra INHS	Dept. of Biology Pharmacy, Faculty of Pharmacy, Institut Ilmu Kesehatan Bhakti Wiyata, Kediri, Indonesia	cikranursanianto@gmail.com	P-PMP-025	113
19.	Danang Ardiyanto	MPTMRDC Tawangmangu, Indonesia	drdanank@gmail.com	O-PMP-017	80
20.	David Tanujaya Kurniawan	Faculty of Medicine, Hang Tuah University, Surabaya, Indonesia	david.jaya07@gmail.com	P-PMP-026	113
21.	Dedi Hanwar	Faculty of Pharmacy, Universitas Muhammadiyah Surakarta, Indonesia	dedi.hanwar@ums.ac.id	O-MPP-009	66
22.	Deni Rahmat	Faculty of Pharmacy, Pancasila University, Jakarta, Indonesia	mangnden78@yahoo.com	O-MPP--006	64
23.	Desy Nurmalitasari	Faculty of Pharmacy Universitas Muhammadiyah Surakarta, Indonesia	Broto.Santoso@ums.ac.id	O-MPP-011	67
24.	Diah Tri Utami	Cancer Chemoprevention Research Centre (CCRC), Faculty of Pharmacy, Universitas Gadjah Mada, Yogyakarta, Indonesia	meiyan_e@yahoo.com	O-MBM-006	85
25.	Dian Ratih Laksmitawati	Faculty of Pharmacy, Pancasila University, Jakarta, Indonesia	dianratih.ffup@gmail.com	P-PMP-019	110
26.	Dina Fatmawati	Faculty of Medicine Islamic University of Sultan Agung Semarang, Indonesia	dienafatma@gmail.com	O-MBM-016	90
27.	Dyah Retno Pembayu	Faculty of Animal Science, Bogor Agricultural University, Indonesia	dyahretnopembayu@gmail.com	O-PMP-005	73
28.	Dyah Subositi	MPTMRDC, Tawangmangu, Indonesia	dyah.subositi@gmail.com	O-MPB-015	61
29.	Edi Purwanto	Faculty of Agriculture, Sebelas Maret University Surakarta, Indonesia	edipur_uns@yahoo.com	O-MPB-010	58
30.	Edy Suryanto	Chemistry, Mathematics and Natural Sciences Faculty, Sam Ratulangi University, Indonesia	ssudewi@gmail.com	P-MBM-009	119
31.	Eka Putri	Pharmacy Dept. of Medicine and Health Science Faculty, Islamic State Univ. Syarif Hidayatullah Jakarta, Indonesia	pu2t_eka17@yahoo.co.id	P-MPP-012	100
32.	Erlinda	The National Agency of Drug and Food Control Pekanbaru, Indonesia	erlindahasan@gmail.com	P-MPP-011	99
33.	Erlindha Gangga	Fakultas Farmasi Universitas Pancasila, Jakarta 12640, Indonesia	erlin_gens@yahoo.com	P-MBM-003	116

No.	NAME	INSTITUTION	E-MAIL	CODE	PAGE
34.	F. Rahmi	Research Center for Drug and Food, The National Agency of Drug and Food Control of the Republic of Indonesia	rusmawatieka@yahoo.com	P-MBM-013	120
35.	Fahri Fahrudin	Dept. of Biology-Faculty of Mathematic and Sciences, Bogor Agricultural University, Indonesia	fahri.fahrudin12p@gmail.com	P-PMP-022	111
36.	Fajar Novianto	MPTMRDC, Tawangmangu, Indonesia	rajaf.naiv@gmail.com	O-PMP-018	80
37.	Farida Juliantina Rachmawaty	Fakultas Kedokteran Universitas Islam Indonesia, Yogyakarta, Indonesia	faridajuli@gmail.com	P-PMP-016	98
38.	Fauzi	MPTMRDC, Tawangmangu, Indonesia	fauzi.b2p2to2t@gmail.com	O-MPB-012	59
39.	Firda Yanuar	Unit of Health Research and Development in Vector-Born Disease Control, Ciamis, Indonesia	fhierda@gmail.com	P-PMP-018	99
40.	Firyal Ilona	Faculty of Medicine, Hang Tuah University, Surabaya, Indonesia	firyalilona@ymail.com	P-PMP-027	114
41.	Fitrahtunnisa	Assessment Institute for Agricultural Technology (AIAT) West Nusa Tenggara, Indonesia	fit_biotek@yahoo.co.id	O-MPB-005	56
42.	Fitrahtunnisa	Assessment Institute for Agricultural Technology (AIAT), West Nusa Tenggara, Jln . Paninjauan Narmada – 83371, West Nusa Tenggara, Indonesia	fit_biotek@yahoo.co.id	P-MBM-008	118
43.	Fitria M. Dianti	Chemical Analysis Diplome, Bogor Agriculture University, Bogor, Indonesia	aalelono@gmail.com	P-MPP-006	97
44.	Furqon Al Muzakki	Islamic State University Of Maulana Malik Ibrahim Malang, Indonesia	Furqon_Almuzakki@yahoo.com	P-MPB-004	93
45.	Galuh Ratnawati	MPTMRDC , Tawangmangu, Indonesia	galuhratnagaluh@gmail. com	O-PMP-021	82
46.	Gemini Alam	Faculty of Pharmacy, Hasanuddin University, Makassar	daengta007@yahoo.com	P-MPP-013	100
47.	H. Rais	Faculty of Animal Science, Bogor Agricultural University, Indonesia	harfina.rais@gmail.com	O-MPP--002	62
48.	Hanif Mustikasari	Faculty of Medicine, Sebelas Maret University, Surakarta, Indonesia	ratih.fk99@gmail.com	P-MBM-012	120
49.	Harto Widodo	Medicinal Plants and Traditional Medicine Research and Development Center, Indonesia	hart2wido2@gmail.com	O-MPB-013	60
50.	Harwoko	Faculty of Health Sciences, Universitas Jenderal Soedirman	woko_har84@yahoo.com	O-MBM-010	87
51.	Haryoto	Faculty of Pharmacy, Universitas Muhammadiyah Surakarta Jl.Ahmad Yani Tromol Pos I, Pabelan Kartasura Surakarta.	har254@ums.ac.id	P-PMP-020	110

No.	NAME	INSTITUTION	E-MAIL	CODE	PAGE
		Indonesia			
52.	Herdwiani W	Faculty of Pharmacy, Setia Budi University, Surakarta, Indonesia	herdwiani@gmail.com	O-MBM-009	87
53.	Heru Sudrajad	MPTMRDC Tawangmangu, Indonesia	herub2p2to2t@gmail.com	O-MPB-007	57
54.	Herwandhani Putri	CCRC, Faculty of Pharmacy, Universitas Gadjah Mada Yogyakarta, Indonesia	meiyan_e@ugm.ac.id	O-MBM-005	85
55.	Hidayah Annisa Fitri	Faculty of Pharmacy Universitas Muhammadiyah Surakarta, Indonesia	Broto.Santoso@ums.ac.id	O-MPP-012	67
56.	Hindra Rahmawati	Faculty of Pharmacy, Pancasila University, Jakarta 12640, Research Centre for Biotechnology - Indonesian Institute of Sciences (LIPI), Cibinong	hindra_rahardjo@yahoo.com	P-MPP-002	95
57.	Indah Solihaho	Faculty of Pharmacy, Gadjah Mada University, Yogyakarta, Indonesia	Solihah_indah@yahoo.co.id	O-PMP-009	76
58.	Irmanida Batubara	Biopharmaca Research Center, Bogor Agricultural University	bfarmaka@gmail.com	O-MBM-002	83
59.	Israhnanto Isradji	Medical Faculty, Sultan Agung Islamic University	suparmi@unissula.ac.id	O-PMP-003	72
60.	Jason M. Peranginangin	Faculty of Pharmacy, Setia Budi University, Surakarta, Indonesia	jason.merari@yahoo.com	O-PMP-012	77
61.	Juanda D	Sekolah Tinggi Farmasi Bandung, Indonesia	dang_juanda@yahoo.com	P-MPP-005	96
62.	Kun Harismah	Jurusan Teknik Kimia Fakultas Teknik Universitas Muhammadiyah Surakarta, Indonesia	kun.harismah@ums.ac.id	P-MPP-008	98
63.	Kurnia Rahayu Purnomo Sari	Faculty of Pharmacy, Gadjah Mada University, Yogyakarta, Indonesia	kurniarahayupurnamasari@gmail.com	O-PMP-001	71
64.	L. Hartanto Nugroho	Faculty of Biology, Universitas Gadjah Mada, Yogyakarta, Indonesia	hartantonugroho2005@yahoo.co.id	O-MPP-008	65
65.	Lia Mariani	Bandung College of Pharmacy (STFB), Bandung, Indonesia	tmleea@gmail.com	O-MPP-018	70
66.	Lili Andriani	Chemistry Department, Institut Teknologi Bandung, Indonesia	liliandriani116@gmail.com	O-MPP--004	63
67.	Liliek Nurhidayati	Faculty of Pharmacy, Pancasila University, Jakarta, Indonesia	liliek_nurhidayati@yahoo.com	P-MPP-003	95
68.	Lince Yarni	Research Center for Drug and Food, The National Agency of Drug and Food Control of The Republic of Indonesia, Jl. Percetakan Negara No. 23 Jakarta, Indonesia	lince.yarni@gmail.com	P-MPP-001	94
69.	Linus Yhani Chrystomo	Department of Biology, Faculty of Mathematics and Natural Sciences, University of Cenderawasih, Jayapura, Papua, Indonesia	chrysyanka@yahoo.com	P-MPE-001	122

No.	NAME	INSTITUTION	E-MAIL	CODE	PAGE
70.	Mar'atus Sholihah	Department of Chemistry, Faculty of Science and Technology, Islamic State University of Malang, Indonesia	qnhe_ta@yahoo.com	P-MBM-010	119
71.	Maulidiah	UIN Maulana Malik Ibrahim Malang, Jl. Gajayana No. 50, Malang 65144, Indonesia	mow_imoet@yahoo.com	P-MPB-003	93
72.	Mira Andam Dewi	Faculty of Pharmacy, University of Jenderal Achmad Yani, Cimahi, Indonesia	miraandamdewi.91@gmail.com	P-MBM-001	115
73.	Misgiati	Akafarma Putra Indonesia Malang	faiz219@yahoo.co.id	P-PMP-012	106
74.	Muhammad Ikhwan Rizki	Pharmacy Postgraduate Program, Ahmad Dahlan University, Yogyakarta, Indonesia	m.ikhwan.rizki@gmail.com	O-MPP-013	68
75.	Muhtadi	Pharmacy Faculty, Universitas Muhammadiyah Surakarta, Kartasura, Surakarta 57102	muhtadi@ums.ac.id	P-PMP-021	113
76.	Ni Luh Putu Yuniantari	Chemistry Department, Institut Teknologi Bandung	yuanchem@yahoo.com	O-MPP-019	71
77.	Nita Supriyati	MPTMRDC, Tawangmangu, Indonesia	nita_supriyati@yahoo.com	O-MBM-013	89
78.	Nuning Rahmawati	MPTMRDC Tawangmangu, Indonesia	nunuyupu@gmail.com	O-PMP-016	79
79.	Nur Azizah	Biology Dept., Science and Technology Faculty, Islamic States Univ. Maulana Malik Ibrahim of Malang, Indonesia	nurazizah260@yahoo.com	P-MPB-005	91
80.	Nurliani Bermawie	Indonesian Spice and Medicinal Crops Research Institutes, Bogor, Indonesia	nurliani@litbang.deptan.go.id	O-MPB-014	60
81.	Nurul Husniyati Listyana	MPTMRDC Tawangmangu, Indonesia	nurul.haydar@gmail.com	O-MPB-004	55
82.	Patonah	Sekolah tinggi Farmasi Bandung (STFB), Indonesia	hfathonah@gmail.com	P-PMP-010	105
83.	Pertamawati	Center for Pharmaceutical and Medicine Technology – LAPTIAB – BPPT, PUSPIPTEK Area – Serpong – Banten, Indonesia	pertamawatikartakusumah@gmail.com	P-PMP-013	107
84.	PR. Widhi Astana	MPTMRDC Tawangmangu, Indonesia	drwidhiastana@gmail.com	O-PMP-020	82
85.	Prasetyorini	Program Studi Biologi, FMIPA-Universitas Pakuan, Indonesia	prasetyorini67@yahoo.co.id	P-PMP-001	101
86.	R. Herni Kusriani	Sekolah Tinggi Farmasi, Jl. Soekarno Hatta 754 Cipadung, Bandung, Indonesia	herni.kusriani@gmail.com	O-MBM-001	83
87.	R. Mutia	Dept. of Animal Nutrition and Feed Technology, Faculty of Animal Science, Bogor Agricultural University, Jl. Rasama, Darmaga, Bogor, Indonesia	rmutia.1@gmail.com	P-PMP-007	104

No.	NAME	INSTITUTION	E-MAIL	CODE	PAGE
88.	Radhia Riski	Sekolah Tinggi Ilmu Farmasi Makassar, Jl. Perintis Kemerdekaan Km13,7 Daya, Makassar, Indonesia	radhia_kecil@yahoo.co.id	P-MBM-014	121
89.	Rahma Widyastuti	MPTMRDC Tawangmangu, Indonesia	dian.ssanti@gmail.com	O-MPB-016	61
90.	Ria Fajarwati	CCRC, Faculty of Pharmacy, Universitas Gadjah Mada Yogyakarta, Indonesia	meiyan_e@yahoo.com	O-MBM-004	84
91.	Rika Despita	Graduate of Agronomy, Sebelas Maret University	suryamanfahmy@yahoo.co.id	O-MPB-008	57
92.	Rina Herowati	Faculty of Pharmacy, Universitas Setia Budi, Surakarta, Indonesia	rinagunawan53@gmail.com	P-PMP-002	101
93.	Rina Priastini	Biology Department, Faculty of Medicine Krida Wacana Christian University, Indonesia	rpriastini@yahoo.com	O-PMP-015	79
94.	Rini Retnosari	Chemistry Department, Institut Teknologi Bandung, Indonesia	retnosarichem@gmail.com	O-MPP-001	62
95.	Rohmat Mujahid	MPTMRDC Tawangmangu, Indonesia	mujahidnp@gmail.com	O-MPP-007	65
96.	Roihatul Muti'ah	Academy of Analyst Health (AAKMAL), Faculty of Pharmacy of Airlangga University	roihatulmutiah@gmail.com	P-MBM-007	118
97.	Romi Abrori	Islamic State University Of Maulana Malik Ibrahim Malang, Indonesia	romyabrory@gmail.com	P-MPB-002	92
98.	Ros Sumarny	Faculty of Pharmacy, Pancasila University, Jakarta	rosaries15@yahoo.com	P-MBM-005	117
99.	Rosa Adelina	Biomedical and Basic Health Technology Center, National Institute of Health Research and Development, Jakarta, Indonesia	rosa.adelina@safro.net	O-MPP-005	64
100.	S. M. Yantika	Graduate School of Bogor Agricultural University, Nutrition and Feed Science Study Program	erniedwierra@yahoo.com	P-PMP-015	108
101.	Sahidin	Faculty of Pharmacy, Halu Oleo University, Kendari, Indonesia	sahidin02@yahoo.com	O-MPP-017	70
102.	Sani Hanifah	National Agricultural Training Centre, Lembang, West Java, Indonesia	sanie_78@yahoo.com	O-MPB-003	55
103.	Sari Haryanti	MPTMRDC Tawangmangu, Indonesia	sari.haryanti@gmail.com	O-MBM-017	91
104.	Setyorini Sugiastut	Faculty of Pharmacy, Pancasila University, Jakarta, Indonesia	setyorinisugiastuti@yahoo.com	P-MBM-002	115
105.	Shanti Listyawati	Doctoral Program of Biotechnology, Universitas Gadjah Mada, Yogyakarta 55281, Indonesia	shantilisty@yahoo.com	P-PMP-005	103
106.	Sidik	Universitas Padjajaran, Bandung, Indonesia	janiesidik@yahoo.co.id	O-MPB-006	56
107.	Siti Fatimah Risa	Faculty of Medicine, Sebelas Maret University, Surakarta, Indonesia	ratih.fk99@gmail.com	P-PMP-023	112

No.	NAME	INSTITUTION	E-MAIL	CODE	PAGE
108.	Sitti Fatimah Syahid	Indonesian Spices and Medicinal Crops Research Institute	novakristin@yahoo.co.id	O-MPB-009	58
109.	Sity Unamah	Faculty of Pharmacy, Ahmad Dahlan University, Jl Prof soepomo Janturan, Yogyakarta, Indonesia	sityunamah@gmail.com	P-MPP-009	98
110.	Sjarif Ismail	Pharmacology Laboratory, Medical Faculty, University of Mulawarman, Samarinda City, Indonesia	ismail8997@yahoo.com	P-PMP-011	106
111.	Slamet Wahyono	MPTMRDC, Tawangmangu, Indonesia	wahyono1983@gmail.com	O-MBM-19	123
112.	Solikin	Purwodadi Botanic Garden-Indonesian Institute of Sciences, West Java, Indonesia	lipisolikin@gmail.com	O-MPB-002	54
113.	Solikin	Purwodadi Botanic Garden-Indonesian Institute of Sciences, Pasuruan, East Java, Indonesia	lipisolikin@gmail.com	P-MPB-001	92
114.	Sri Nabawiyati Nurul Makiyah	Faculty Medicine & Health Science, Universitas Muhammadiyah Yogyakarta, Indonesia	nurul_makiyah@umy.ac.id	O-PMP-011	77
115.	Sri Wahyuningsih	Faculty of Pharmacy, University of Jenderal Achmad Yani, Cimahi, Indonesia	sri_wahyuningsih40@yahoo.co.id	P-PMP-003	102
116.	Suherman	Faculty of Medicine and Health Sciences, Muhammadiyah University of Jakarta, Indonesia	suheriau@yahoo.com	P-MBM-006	117
117.	Sulistiyani	Department of Biochemistry, Bogor Agricultural University, Bogor, Indonesia	sulistiyani_sapardi@yahoo.com	P-PMP-009	105
118.	Sumiati	Faculty of Animal Science, Bogor Agricultural University, Indonesia	y_sumiati@yahoo.com	O-PMP-004	73
119.	Sunu Pamadyo	MPTMRDC Tawangmangu, Indonesia	suneo.pamadeo@gmail.com	O-PMP-007	74
120.	Suparmi	Medical Faculty, Sultan Agung Islamic University, Semarang, Indonesia	suparmi@unissula.ac.id	O-MPP-016	69
121.	Susan Maphilindawati N.	Indonesian Research Centre for Veterinary Science, Bogor, Indonesia	sri.suryatmiati@yahoo.co.id	O-MBM-011	88
122.	Syarmalina	Faculty of Pharmacy Pancasila University, Srengseng Sawah, Jagakarsa, Jakarta Selatan 12640, Indonesia	mangnden78@yahoo.com	P-MBM-004	116
123.	Tiah Rachmatiah	Faculty of Science and Mathematic, National Institute of Science and Technology, Jakarta, Indonesia	tiahrachmatiah@yahoo.com	O-MBM-008	86
124.	Vera Nurviana	Faculty of Pharmacy Ahmad Dahlan University, Jl. Prof Soepomo, Janturan, Yogyakarta, Indonesia	vevey06farm@gmail.com	P-MPP-007	97
125.	Warsinah	Fakultas Kedokteran dan Ilmu-Ilmu Kesehatan Universitas Jenderal	warsinahapt@gmail.com	O-MPP-010	66

No.	NAME	INSTITUTION	E-MAIL	CODE	PAGE
		Soedirman, Purwokerto, Indonesia			
126.	Widya Hermana	Department of Nutrition and Feed Technology, Faculty of Animal Science, Bogor Agricultural University, Indonesia	widya_hermana@yahoo.com	P-PMP-017	109
127.	Wijayanti T	Faculty of Pharmacy, Setia Budi University, Surakarta, Indonesia	jeng_yantie_apt@yahoo.com	O-PMP-013	78
128.	Winarni A	Faculty of Animal Science, Bogor Agricultural University, Bogor, Indonesia	erniedwierra@yahoo.com	O-PMP-002	72
129.	Yenny Belinda Jioe	Medical Faculty, Maranatha Christian University, Bandung, Indonesia	sugiarto_pura@ymail.com	P-PMP-004	102
130.	Yesi Desmiaty	Faculty of Pharmacy, Pancasila University, Jakarta, Indonesia	mangnden78@yahoo.com	O-MBM-003	84
131.	Yoga Mulia Pratama	Faculty Of Medicine, Sebelas Maret University, Surakarta, Indonesia	yoga.mulia.pratama@gmail.com	O-MPP-014	68
132.	Yudi Purnomo	PhD student of Medical Faculty Brawijaya University, Malang, Indonesia	y_purnomo92@yahoo.com	P-PMP-028	114
133.	Yuli Widiyastuti	MPTMRDC, Tawangmangu, Indonesia	ywidiyasis@gmail.com	O-MBM-018	91
134.	Yulio Nur Aji Surya	Faculty of Pharmacy, Sanata Dharma University, Yogyakarta, Indonesia	atma14@usd.ac.id	O-MPP-015	69
135.	Yustina Sri Hartini	Faculty of Pharmacy, Sanata Dharma University, Indonesia	yustinahartini@yahoo.com	O-PMP-010	76
136.	Yudi Padmadisastra	Sekolah Tinggi Farmasi Bandung, Indonesia	yudi.padmadisastra@yahoo.com	P-MPE-02	
137.	Zuraida Zulkarnain	Medicinal Plant and Traditional Medicine Research and Development Centre, Tawangmangu, Indonesia	zuraida.zu@gmail.com	O-PMP-006	74

TABLE OF CONTENTS

ORGANIZING COMMITTEE

Director	:	Minister of Health
Advisory	:	Director General of National Institute of Health Research and Development
Project Director	:	General Secreatary of Working Group of Indonesia Medicinal Plant Director of Medicinal Plant and Traditional Medicine Research and Development Centre
Steering Committe		
	:	Prof. Dr. dr. Agus Purwadianto, SH., M.Si., Sp.F(K)
	:	DR.dr. Trihono, M.Sc. (NIHRD)
	:	Prof. Suwijiyo Pramono, DEA., Apt
	:	Prof. L. Broto S. Kardono
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Organizing Committee		
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	:	Ristiyanti Purwaningsih, SE
	:	Heri Dwi Prasetiyo, SE
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	:	drh. Galuh Ratnawati
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	:	Prasetyo Hermanto, S.Kom
	:	Pedro Harmoko, S.Sos
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Agenda and Meeting		
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	:	Sari Haryanti, M.Sc
	:	Nuning Rahmawati, M. Sc
	:	Amalia Damayanti, M. Si

	:	dr. Zuraida Zulkarnain
	:	M.B. Samsu Adi, M.Si
	:	Elok Widayanti, M.Si
	:	Fitriana, S.Farm
	:	Saryanto, S.Si., Apt
	:	Endang Brotojoyo,Amd

Meal and Beverage

Coordinator	:	Toif Setiani, Amd
	:	Sugeng Winarsih

Equipment, accomodation, and Transportation

Coordinator	:	Akhmad Saikhu, M.ScPH
	:	Edwin Fajar Setyawan, SKM
	:	Agus Windarto, STP
	:	Agus Effendy, ST
	:	Sarwono
	:	Kamino
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Exhibition and Sponsorship

Coordinator	:	Esa Aji Pratama, S.E.
	:	Nengah Ratri, Amd
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	:	Bagas Nur Adi, Amd

SYMPOSIUM RULES

The "International Symposium on Medicinal Plant and Traditional Medicine" is a formal scientific meeting and all participants are required to these following rules:

1. The official language is English. All presentations, including articles, oral and poster presentations, should be in English. Some workshops, small group discussions, or small group meetings may be in Indonesian languages. However, all submissions must be in English.
2. All participants must be on time and sign the attendance list before going into the symposium room.
3. All participants are not allowed to smoke, bring and use the alcoholic beverage and prohibited drugs during the symposium.
4. During the symposium presentation time, handphone and all gadgets should not be activated.
5. All participants should not visit the research garden and laboratories of "Medicinal Plant and Traditional Medicine Research and Development Centre" without permission by organizing committee.
6. **For oral participants**, please submit your presentation file to the committee at your early registration. Presentations will be conducted as parallel session in accordance with the committee schedule. Each session may consist of 5-8 presenters. Time allocation for each presenter is 10 minutes for presentation, followed by discussion for 5 minutes. Participants are kindly requested to be in the parallel room at least 10 minutes prior to the beginning of the session. It is important to stay on time.
7. **For poster participants,** please submit your poster to the committee at your early registration. The poster will be installed at the appropriate board by the committee. The poster must be removed from the poster board at the end of the symposium.
8. All participants are invited to submit the manuscript for publication. Any authors who wishes to publish their manuscripts must complete and sign the publication agreement and copy right assignment. The form will be distributed by the committee at early registration. The manuscripts submission deadline is at 15.00 pm, 5th June 2014. To publish the proceeding in a timely manner, this deadline must be strictly observed.

SYMPOSIUM PROGRAM

Day 1 (Wednesday, June 4th 2014)		
Venue: MPTMRDC's Hall		
TIME	**PROGRAM**	**PERSON**
08.00 - 09.00	Registration and Jamu Welcome Drink	Committee
	Opening session	
09.00 - 09.10	Singing Indonesia Raya	Conducted by Bagas Adi
09.10 - 09.30	Performing Dance	Bambangan Cakil
09.30 - 09.40	Report by Chief of Committee	Nagiot CansalonyTambunan
09.40 - 10.05	Remarks by Secretary General of Working Group on Indonesia Medicinal Plant	Indah Yuning Prapti
10.05 -10.15	Opening Symposium	dr. Nafsiah Mboi, Sp.A, MPH (in confirmation)
	Keynote Speech	
10.15 -10.40	Policy on Integration of Traditional Medicine in National Health Care	dr. Nafsiah Mboi, Sp.A, MPH (in confirmation)
10.40 -11.05	Supporting of Ministry of State Owned Enterprises (BUMN) on Indonesia Traditional Medicine (ITM) Development	Prof. Dr. (HC) Dahlan Iskan (in confirmation)
	Plenary Session 1	**Moderator: Prof. Dr. Emiliana Tjitra, PhD.**
11.05 -11.30	Promoting Traditional Medicine for the Community and Health Care System	Dr. Khanchit Limpakarnjanarat (WHO Representative to Indonesia)
11.30 -11.55	Evidence Based Jamu for Health Service System in Indonesia	DG of National Institute of Health Institute R&D Ministry of Health
11.55 -12.15	Breakthrough Program to Support Sustainability of Standardized Medicinal Plant	DG of National Institute of Agriculture R&D, Ministry of Agriculture Republic of Indonesia
12.15 -12.50	Discussion	
12.50 -13.50	Lunch Break	Committee
	Plenary Session 2	**Moderator :Dra. Nani Sukasediati, Apt., MS**
13.50 -14.15	Fostering Integration Thai Traditional Medicine in Health Services	Dr. Anchalee Chutaputti Department of Traditional Medicine, Thailand
14.15 -14.40	Advanced Research in Development of Medicinal Plant and Biodiversity Conservation	Prof. Chandrakant Salunke Post Graduate of Botany Centre, University Khrisna Maha Vidyalaya
14.40 -15.05	Discussion	
15.05 -15.15	Jamu Break	Committee
15.15 -17.00	Parallel Session	Committee
18.30 - 20.00	Dinner	Committee
20.00 – finish	Meeting of National Working Group on Indonesia Medicinal Plant	Committee

Day 2 (Thursday, June 5th 2014)

Venue: CMPTMRD's Hall/Outdoor		
TIME	**PROGRAM**	**PERSON**
07.30 - 08.30	Registration	
	Plenary Session 1	**Moderator: Prof. Dr. Suwijiyo Pramono, DEA, Apt.**
08.30 - 09.55	Evolution of Indonesia Traditional Medicine	Dr. dr. Trihono, M.Sc National Institute of Health
08.55 - 09.20	Clinical Research on Traditional and Complementary Medicine	Dr. dr. Siswanto National Institute of Health
09.20 - 09.50	Discussion	Committee
	Plenary Session 2	**Moderator: Prof. Kardono**
09.50 - 10.15	The Milestone of Vietnam Gingseng Research and Development	Nguyen Thi Thu Huong, PhD (Research Center of Ginseng and Medicinal Materials, Ho Chi Minh City National Institute of Medicinal Materials, Vietnam)
10.15 - 10.40	The Challenge of Traditional Medicine in Global Markets	GP Jamu
10.40 - 11.05	Phytochemical Role in Medicinal Plant Standardization	Dr. Sei-Ryang Oh Director of Natural Medicine Research Centre (Korean Research Institute on Biology and Biotechnology)
11.05 - 11.25	Research Review of Lada (*Piper nigrum*, L.)	Dr. Ir. Pasril Wahid, M.S.,APU. The Centre of Plantation Research and Development, Ministry of Agriculture RI
11.25 - 12.00	Discussion	
12.00 - 13.00	Lunch Break	Committee
13.10 - 16.00	Parallel Session	Committee
16.00 - 17.00	Closing Ceremony	Committee
Day 3 (Friday, June 6th 2014)		
I. Venue: MPTMRDC's Garden and Laboratory		
TIME	**PROGRAM**	
08.00-17.00	Fieldtrip to Tlogodlingo aromatic garden, Sarangan Lake	Committee
II. Venue: MPTMRDC's Hall/Outdoor		
TIME	**PROGRAM**	
08.00-17.00	Training of Jamu Net Repository	WHO RO Indonesia

ORAL PRESENTATION SCHEDULE
DAY 1, JUNE 4th 2014

ROOM 1 (SINEMA)
BOTANY AND CULTIVATION TECHNOLOGY
Moderator : Dr. Usman Siswanto
Assistant : Devy

NO	KODE	TITLE	AUTHOR/s	TIME
1.	O-MPB-001	Identification of medicinal plant wood species, a review	Andianto	15.15 -15.25
2.	O-MPB-002	Seed germination of *Oldenlandia corymbosa* L. on some seeding media	Solikin	15.25 -15.35
3.	O-MPB-003	Response of some organic fertilizer and dose Vesicular Arbuscular Mycorrhizal (VAM) on growth and yield of temulawak (*Curcuma xanthorrhiza* Roxb.)	Sani Hanifah, Samanhudi, A. Yunus, and M. Rahayu	15.35 -15.45
4.	O-MPB-004	Feasibility Analysis of Fennel (*Foeniculum vulgare* Mill.) Cultivation in Tawangmangu	Nurul Husniyati Listyana, Novi Liastuti	15.45 -15.55
5.	O-MPB-005	In-vitro germination and micropropagation of alfalfa (*Medicago sativa* L.) as clorophil sources	Fitrahtunnisa and Sajimin	15.55 -16.05
6.	O-MPB-006	Highlight on the patent and market oriented herbal medicine research	Sidik and R. Maya Febriyanti	16.05 -16.15
7.	O-MPB-007	The effects of cytokinin (BAP) and gibberelin on in vitro seedling growth of pulesari (*Alyxia reinwardtii* Bl)	Heru Sudrajad, Didik Suharto, Harto Widodo	16.15 -16.25
8.	O-MPB-008	Influence various types of manure and dosage of arbuscular mycorrhiza on the growth and results of ginger (*Zingiber officinale* Rosc.)	Rika Despita, Samanhudi, B. Pujiasmanto, M. Rahayu	16.25 -16.35
		Discussion		16.35-17.00

DAY I, JUNE 4th 2014
ROOM 2
MEDICINAL PLANT PHYTOCHEMISTRY
Moderator : Dr. Rifatul Wijhati
Assistant : Mery

No.	KODE	TITLE	AUTHOR/s	TIME
1.	O-MPP-001	Isolation and characterization of prenyltransferase responsible for biosynthesis of secondary metabolites in stem bark of *Morus macroura*	Rini Retnosari, Rukman Hertadi, Euis H. Hakim	15.15 -15.25
2.	O-MPP-002	Nutrients and phytochemicals analysis of *Murdannia bracteata* AND its effect on the characteristics of rumen fermentation	H. Rais, L. Abdullah, S. Suharti	15.25 -15.35
3.	O-MPP-003	Molecular docking studies of herbal compounds (mangosteen rind and curcumin derivatives) as maltase-glucoamylase inhibitors for diabetes mellitus (DM) drug candidates	Arwansyah, L. Ambarsari, T. Sumaryada	15.35 -15.45
4.	O-MPP-004	Isolation and purification of diels-alderase which involved in biosynthesis of diels-alderadducts compounds in root culture of *Morus cathayana*	Lili Andriani, Rukman Hertadi, Euis Holisotan Hakim	15.45 -15.55
5.	O-MPP-005	Catechin gallate and epigallo catechin gallate as antidyslipidemic drug candidates based on molecular docking study	Rosa Adelina and Ani isnawati	15.55 -16.05
6.	O-MPP-006	Tablet formulation of sambiloto leaves extract (*Andrographis paniculata* [Burm.f.] Ness) using direct compression method	Deni Rahmat, Rahayu Amelia	16.05 -16.15
7.	O-MPP-007	The analysis method selection of flavonol (quercetin) by uv vis spectroscopy and it's application on mulberry (*Morus alba* L.)	Rohmat Mujahid, Suwidjiyo Pramono dan Sri Noegrohati	16.15 -16.25
8.	O-MPP-008	Toxicity, phytochemical contents and amilum characters of gadung (*Dioscorea hispida* Dennst.) tuber accession Timor Leste, Kalimantan Tengah and Daerah Istimewa Yogyakarta	L. Hartanto Nugroho and Anna Estyaniyana	16.25 -16.35
		DISCUSSION		16.35-17.00

DAY I, JUNE 4th 2014
ROOM 3
PHARMACOLOGY OF MEDICINAL PLANT (PMP)
Moderator : Dra. Lucie Widowati, MS., Apt.
Assistant : Elok Widayanti

No.	KODE	TITLE	AUTHOR/s	TIME
1.	O-PMP-001	Hypoglycemic effect of combination of *Andrographis paniculata* (Burm.f) Ness and *Gynura procumbens* (Merr) ethanolic extract in alloxan-induced hyperglycemic rats	Kurnia Rahayu Purnomo Sari, Agung Endro Nugroho, Sudarsono	15.15 -15.25
2.	O-PMP-002	Effect of saga and kemuning leaves meal on parasites infection of etawah crossbred goat	Winarni A, Harlina E, Evvyernie D.	15.25 -15.35
3.	O-PMP-003	Histopathologic evaluation and endometrial thickness after treatment of kepel fruit extract in an experimental mice model	Israhnanto Isradji, Iwang Yusuf, Suparmi, Dina Fatmawati	15.35 -15.45
4.	O-PMP-004	Usage of sembung (*Blumea balsamifera* (L.) DC) leaf meal to replace bacitracin antibiotic in broiler chicken production	Sumiati, Heksa Oktiani Putri Sumarsono, Neli Rosmawati, Dewi	15.45 -15.55
5.	O-PMP-005	Quality and hedonic test of dairy goat milk fed with biscuit of *Carica papaya* L. leaf - *Indigofera* sp.	Dyah Retno Pembayu, Idat Galih Permana, Yuli Retnani	15.55 -16.05
6.	O-PMP-006	Clinical study of galactogogum jamu formula to enhances breast milk volume in mothers	Zuraida Zulkarnain and Danang Ardiyanto	16.05 -16.15
7.	O-PMP-007	Effect of jamu on levels of interferon gamma	Sunu Pamadyo and Danang Ardiyanto	16.15 -16.25
8.	O-PMP-021	Toxicity testing of sembung (*Blumea balsamifera* (Linn.) DC.), kemukus (*Piper cubeba*), patikan kebo (*Euphorbia hirta* L.) and rumput teki (*Cyperus rotundus* L.)	Galuh Ratnawati and Zuraida Zulkarnain	16.25 -16.35
		DISCUSSION		16.35-17.00

DAY I, JUNE 4th 2014
ROOM 4
MICROBIOLOGY AND BIOTECHNOLOGY
Moderator : Dr. Gemini Alam
Assistant : Aziza

No.	KODE	TITLE	AUTHOR/s	TIME
1.	O-MBM-001	Determination antibacterial compound of extract and fractions of red betel leaf (*Piper crocatum* Ruiz & Pav)	R. Herni Kusriani, Lia Marliani, Raisa Noer Fadillah	15.15 -15.25
2.	O-MBM-002	HMGCo-A reductase and α-glucosidase inhibitory activities of selected indonesian medicinal plants	Irmanida Batubara, Latifah K Darusman, Susi Indariani, Danang Ardiyanto, Indah Yuning Prapti	15.25 -15.35
3.	O-MBM-003	In vitro ACE inhibition activity and total flavonoids quantification of ethanolic extract of pletekan (*Ruellia tuberosa* L.) leaves	Yesi Desmiaty, Deni Rahmat, Angelina Noeryanti Rainoer	15.35 -15.45
4.	O-MBM-004	Potency rhizome extract of temulawak (*Curcuma xanthorriza*) as co-chemoptherapeutic agents in colon cancer cell	Ria Fajarwati, Herwandhani Putri, Sri Handayani, Edy Meiyanto	15.45 -15.55
5.	O-MBM-005	Sinergism anti-proliverative effect of *Ficus septica* Burm.f. leaves ethanolic extract and *Curcuma xanthorriza* rhizome ethanolic extract in combination with doxorubicin on widr colon cancer cells	Herwandhani Putri, Sri Handayani, Ria Kastian Fajarwati, Edy Meiyanto, R. Istighfari Jenie, Sari H.	15.55 -16.05
6.	O-MBM-006	Brazilein enhances cytotoxicity of doxorubicin on WiDr coloretal cancer cells by apoptosis induction and cell cycle modulation	Diah Tri Utami, Ni Putu Linda Laksmiani, Riris Istighfari Jenie, Edy Meiyanto	16.05 -16.15
7.	O-MBM-007	Synergistic cytotoxicity effect by combination treatment of brazilein and cisplatin related apoptosis inducing and cell cycle modulation on T47D breast cancer cell line	Anif Nur Artanti, Ni Putu Linda Laksmiani, R. Istighfari Jenie, Edy Meiyanto	16.15 -16.25
8.	O-MBM-008	In vitro antimalarial activity of compound from n-hexane extract of *Nectandra angustifolia* bark	Tiah Rachmatiah, Subaryanti, M Hanafi, Hanita Omar	16.25-16.35
		DISCUSSION		16.35-17.00

ORAL PRESENTATION SCHEDULE
DAY 2, JUNE 5th 2014

ROOM 1 (SINEMA)
BOTANY AND CULTIVATION TECHNOLOGY
Moderator : Dr. Usman Siswanto
Assistant : Devy

No.	KODE	TITLE	AUTHOR/s	TIME
1.	O-MPB-009	In vitro conservation of several endangered medicinal plants	Sitti Fatimah Syahid and Natalini Nova Kristina	13.10 -13.20
2.	O-MPB-010	Effect of watering frequency on growth and anthocyanins content of light red roselle and deep red roselle	Edi Purwanto, Andri Eko Permadi and Sumani	13.20 -13.30
3.	O-MPB-011	Role of biotechnology in medicinal plants development	Arini Putri Hanifa and Acima	13.30 -13.40
4.	O-MPB-013	Accessions relationship of purwoceng (*Pimpinella pruatjan* Molkenb.) based on morphological caracters	Harto Widodo, Azizatur Rahmah, Rina Sri K	13.40 -13.50
5.	O-MPB-014	Variation in morphological characters, yield components and essential oil contents of java turmeric (*Curcuma xanthorrhiza* Roxb.) accessions from Jawa	Nurliani Bermawie, Natalini Nova Kristina and Susi Purwiyanti	13.50 -14.00
6.	O-MPB-016	The study of sunflower (*Helianthus annuus* L.) and galangal (*Kaempferia galanga* L.) on growth and yield in intercropping system	Dian Susanti* and Rahma Widyastuti	14.00-14.10
		Discussion		14.10-14.40
7.	O-MPB-012	Study on water availability and shade on rate of growth and valeric acid content of valerian [*Valeriana javanica* (Bl.) DC.]	Fauzi, Yuli Widiyastuti, Bambang Pujiasmanto	14.40 –14.50
8	O-MPP-014	Virtual screening of compounds from Indonesian herbal database for potential human epidermal growth factor receptor inhibitors	Yoga Mulia Pratama, Luthfi Saiful Arif, Fitria Dewi Larassuci	14.50 -15.00
9	O-MPB-015	Intraspecific variation of ekinase accessions *(Echinacea purpurea* (L.) Moench) from mass selection year I based on ISSR analysis	Dyah Subositi and Fauzi	15.00 -15.10
10.	O-MBM-019	Cytotoxic activity of mistletoe (*Scurrula atropurpurea* Bl. Dans.) extract against breast cancer cells MCF-7	Slamet Wahyono* and Nita Supriyati	15.10 -15.20
11.	O-MPP-011	Molecular docking of antioxidant compounds: groups of flavonoid and phenolic from eight Indonesian medicinal plants	Desy Nurmalitasari, Agni Hikmawati, Laily Hidayati, Broto Santoso	15.20-15.30
		Discussion		15.20-16.45

DAY 2, JUNE 5th 2014
ROOM 2
MEDICINAL PLANT PHYTOCHEMISTRY
Moderator : Dr. Rifatul Wijhati
Assistant : Mery

No.	KODE	TITLE	AUTHOR/s	TIME
1.	O-MPP-009	Analysis of secondary metabolites profile of lempuyang gajah (*Zingiber zerumbet* Smith) ethanol extract using gas chromatography mass spectroscopy with derivatization	Dedi Hanwar, Mutia Sari Dewi, Andi Suhendi, Ika Trisharyanti D.K	13.10 -13.20
2.	O-MPP-013	Optimization of chitosan nanoparticles preparation of rosella (*Hibiscus sabdariffa* L.) calyx extract	Muhammad Ikhwan Rizki, Nurkhasanah, Tedjo Yuwono	13.20 -13.30
3.	O-MPP-012	Purple sweet potato leaves: antioxidant activity by DPPH, CUPRAC, FTC, TBA methods and molecular docking profile using DOCK6	Hidayah Annisa Fitri, Titis Rahayu, Broto Santoso*, Andi Suhendi	13.30 -13.40
4.	O-MPP-016	Stability characterization of β-carotene from ambon banana (*Musa paradisiaca sapientum*) peel: it's potency as vitamin A supplement	Suparmi, Harka Prasetya, Martanto Martosupono and Lasmono Tri S.	13.40 -13.50
5.	O-MPP-018	Antioxidant activity and total phenolic content of bangle (*Zingiber cassumunar* Roxb.) rhizome	Lia Marliani, Winasih R., Anju Sinurat	13.50 -14.00
6.	O-MPP-019	Isolation and characterization secondary metabolites from the root culture of *Morus cathayana* and its toxicity	Ni Luh Putu Yuniantari, Euis Holisotan Hakim	14.00 -14.10
		Discussion		14.10- 14.40
7.	O-MPP-010	Screening of volatile compounds of brotowali (*Tinospora crispa*) and antifungal activity against *Candida albicans*	Warsinah and Harwoko	14.40 -14.50
8.	O-MPP-015	Determination of antioxidant activity using DPPH method to the ethyl acetate fraction of velvet apple (*Diospyros blancoi* A. DC.) leaf methanol extract	Yulio Nur Aji Surya and Yohanes Dwiatmaka	14.50 -15.00
9.	O-MPP-017	Profil radical scavenger and antibacterial activities of stigmasterol and stigmasta-4,22-dien-3-on from stems of *Polygonum pulchrum*	Sahidin, Nohong, Marianti A. Manggau	15.10-15.20
10.	O-MBM-013	In vitro anti fungal activity of essential oil and extract of sirih manado leaves (*Piper betle* L.) againts *Candida albicans*	Nita Supriyati, Fijri Cahyani	15.20–15.30
11.	O-MBM-018	Phytochemical and cytotoxic evaluation of krangean fruits [*Litsea cubeba* (Lour.) Pers.] extracts against cancer cell line	Yuli Widiyastuti, Sari Haryanti, and Elok Widayanti	15.30-15.40
		Discussion		15.40– 16.00

DAY 2, JUNE 5th 2014
ROOM 3
PHARMACOLOGY OF MEDICINAL PLANT
Moderator : Dra. Lucie Widowati, MS., Apt.
Assistant : Aziza

No.	KODE	TITLE	AUTHOR/s	TIME
1.	O-PMP-008	Antihyperglycemic activity of combination of *Azadirachta indica* A. Juss and *Gynura procumbens* (Merr.) ethanolic extract in alloxan-induced diabetic rats	Anggit L. Sunarwidhi, Agung E. Nugroho, Sudarsono	13.10 -13.20
2.	O-PMP-010	The effect of crocatin and deasetil crocatin isolated from red betel (*Piper crocatum* Ruiz & Pav.) leave on mice antibody titre	Yustina S.Hartini, S. Wahyuono, S.Widyarini, and Ag.Yuswanto	13.20 -13.30
3.	O-PMP-011	B220^{+}IGE^{+} spleen of mice on challenge phase of hypersensitivity induction after given of ethanol extract *Dioscorea alata* L. rhizomes	Sri Nabawiyati Nurul Makiyah, Widodo, Muhaimin Rifa'i, Moch. Sasmito Djati	13.30 -13.40
4.	O-PMP-012	Effect of the water fraction of *Solanum torvum* Swartz fruit on experimentally increased Prostate Specific Antigen (PSA) in wistar rats	Jason M. Peranginangin, Andreanus A. Soemardji, I. Ketut Adnyana, Diah	13.40 -13.50
5.	O-PMP-013	Effectivenes krangean (*Litsea Cubeba* Pers) stem bark extract as a lowering blood glucose in glucose induced mice	Wijayanti T, I Ketut A, Sukrasno, Neng Fisheri K	13.50 -14.00
6.	O-PMP-014	Observasional study of Lampung traditional medicinal herb on 6-12 years old diarrheal pattients	Asep Sukohar, Baheramsyah, Wiranto, Niniek Ambarwati, Awliyanti, Arie Irawan, Aditya	14.00 -14.10
		Discussion		14.10-14.40
7.	O-PMP-015	The teratogenic effect of ethanolic extract of permot (*Passiflora foetida*) leaf in pregnant mice (*Mus musculus*)	Rina Priastini	14.40 -14.50
8.	O-PMP-016	The ninety consecutive day administration effect of lactagoga jamu against urea, creatinine, SGPT and SGOT levels of female Wistar rats	Nuning Rahmawati and Asri Wuryani	14.50 -15.00
9.	O-PMP-017	The effect of anemia jamu formula to the liver functions	Danang Ardiyanto, Sunu Pamadyo TI	15.00 -15.10
10.	O-PMP-018	The effect of hypercholesterolemia jamu formula on the quality of life	A. Triyono, Fajar Novianto*, PR. Widhi A.	15.10 -15.20
11.	O-PMP-020	The observational study of jamu formula on the insomnia severity index (ISI) of insomnia patients	PR. Widhi Astana and Agus Triyono	15.20 -15.30
		Discussion		15.30 -15.55

DAY 2, JUNE 5th 2014
ROOM 4
MICROBIOLOGY AND BIOTECHNOLOGY
Moderator : Dr. Gemini Alam
Assistant : Elok Widyawati

No.	KODE	TITLE	AUTHOR/s	TIME
1.	O-MBM-009	Isolation and praclinical trial of cinnamon oil for getting phytopharmaca of anticancer (Toxicity effect of cinnamon oil on male rat) and cytotoxicity effect of cinnamon oil on WidR culture cell)	Herdwiani W, Fransiska L, Rica, Yolanda CS, Sari W, Imama, Zullies, Hertianti	13.10 -13.20
2.	O-MBM-010	Antibacterial activity of methanolic extract of *Plumeria acuminata* stembark against *Escherichia coli* and *Staphylococcus aureus*	Harwoko, Nuni Anindita, Eka Prasasti Nurrachmani	13.20 -13.30
3.	O-MBM-011	The antibacterial effectivity of *Garcinia mangostana* L., *Phyllanthus niruri* L., *Allium sativum* L. and *Lumbricus rubellus* to reduce the bacterium *Salmonella* sp. in efforts to prevent and minimize the incidence of salmonellosis in poultry products	Susan Maphilindawati N., Sri Suryatmiati P., Andriani, Masniari Poeloengan	13.30 -13.40
4.	O-MBM-012	The formulation and antibacterial activity of hand sanitizer gels containing lampes (*Ocimum sanctum* L.) leaves extract as an active compound	Alasen Milala Sembiring, Mariana Wahjudi & Meriyanti S.	13.40 -13.50
5.	O-MBM-014	Combination of *Calotropis gigantea* radix extract and artemisin as an antimalarial agent against *Plasmodium berghei*	Asnal Fatati, Roihatul Muti'ah, Elok Kamilah Hayati	13.50 -14.00
6.	O-PMP-009	Antidiabetic effects of combination of andrographolide and curcumin in insulin resistance rats	Indah Solihah, Suwijiyo Pramono	14.00 -14.10
		DISCUSSION		14.10 -14.40
7.	O-MBM-015	Protective effect of bixin isolated from *Bixa orellana* L. seeds on UV B-induced inflammation and immunosuppression of the skin	Atina Hussaana, Suparmi, Hani Afnita	14.30 -14.40
8.	O-MBM-016	Cell cycle arrest and apoptosis inducing-activities of *Melia azedarach* ethanolic extract againts MCF-7 breast cancer cell line	Dina Fatmawati, Titiek Sumarawati, U. Dian Indrayani, Sumarno, Chodidjah, A. Suprijono	14.40 - 14.50
9.	O-MBM-017	Comparative cytotoxic activity of aqueous and ethanolic extract from mangosteen rinds to various cancer cell lines	Sari Haryanti, Elok Widayanti, and Yuli Widiyastuti	14.50 -15.00
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Protective Effect of Bixin Isolated from *Bixa orellana* L. Seeds on UVB-Induced Inflammation and Immunosuppression of the Skin

Atina Hussaana[1*], Suparmi[2], Hani Afnita Murti[3]

[1]Department Pharmacology of Medical Faculty Universitas Islam Sultan Agung
[2]Department Biology of Medical Faculty Universitas Islam Sultan Agung
[3]Department Physics of Medical Faculty Universitas Islam Sultan Agung
**Corresponding author, email : atinahussaana@yahoo.com*

Introduction : Excessive UV radiation on the skin can cause DNA damage that triggers the inflammatory response and immunosuppression. This study aimed to verify whether the bixin lotion has the effect to offer protection against inflammation and immunosuppression due to acute UVB irradiation in shaved BALB /c mice.
Methods : Protection against inflammation and immunosuppression, respectively were studied in 4 groups of mice receiving the topical application of base lotion (control); bixin lotion doses of 0.5; 2.5 and 125 mg, 10 days prior to and during the UVB irradiation. Inflammation was induced by UVB irradiation 360 mJ/cm2 once a day for 3 consecutive days, whereas immunosuppression was induced for 5 consecutive days. The inflammatory response was measured as an increase in middorsal skinfold thickness at the peak response. The immune response was measured as the contact hypersensitivity (CHS) response to oxasolon sensitization.
Results : The results indicated that in all concentrations used, bixin lotion significantly decreased the middorsal skinfold thickness at 72 hours after UVB radiation ($p < 0.05$) compared to the control, but there was no significant difference between couples of the dose of bixin. Bixin lotion was also able to restore the suppression of CHS from 34.22% in the control group to 11.4; 0.5 and -67% ($p < 0.05$) at doses of 0.5; 2.5 and 125 mg respectively.
Conclusion : Bixin lotion had potential to reduce the inflammatory edema reaction and the suppression of CHS of mice induced by UVB radiation.

Keywords: *Bixa orellana* L., photoprotection, inflammation, immunosuppression, UVB radiation

INTRODUCTION

Ultraviolet radiation containing UVB is an important environmental factor in pathogenesis of skin premature aging and skin cancer (Yasuhiro et al., 2008). UVB rays with a wavelength of 290-340 nm can reach the earth and if excessive can be dangerous and mutagenic. Direct exposure of UVB can penetrate the basal cells of the epidermis, thus forming ROS (Reactive Oxygen Species) in the form of 8-hydroxy-deoxyguanosine (8-OHdG), which is a component that most potentially create DNA damage and very mutagenic (Ichihashi, 2009). ROS cause oxidative damage to DNA and produce photoproduct 2-dipyrimidin. DNA photoproduct resulting from UVB is often called cyclobutane pyrimidine dimers (CPD) and (6-4) photoproduct.

In normal conditions, photoproduct will be repaired by the DNA nucleotid exicision repair (NER) but have limited capacity (Ueda et al., 2004; Wirohardidjojo et al., 2009; Matsumura and Ananthaswamy, 2002). In addition to causing DNA photoproduct, UVB radiation can also induce cyclooxygenase-2 (COX-2) that play a role in chronic inflammatory processes and

carcinogenesis (Keum et al. 2012). UV radiation interfere with the immune system by destroying Langerhans cells and / or induce cytokines from keratinocytes and / or via macrophages that appear in the epidermis after losing Langerhans cells. UV exposure not only prevents the stimulation of antigen-specific T cell response, but also can detach suppressor T cells that specifically inhibit T cell division reactive to specific antigens (De Grujil FR, 1997; Cesarini JP, 1996)

Bixin isolated from Bixa orellana L. seeds are some of pigments with the major components called Bixin ($C_{25}H_{30}O_4$) of approximately 80% (Junior et al., 2005). Bixin has a double bond conjugation which has the ability to capture and absorb light from the sun at ultraviolet wavelength region. Bixin is a natural antioxidant that can prevent some types of cancer and other degenerative diseases (Junior et al., 2005). Bixin in Bixa orellana L. plant has characteristic of cyclo-oxygenase inhibitors (COX) -1 and COX-2 (Reddy et al., 2005). Inhibition of the COX enzyme that causes prostaglandins are not formed, so that the inflammation can be reduced (Ikawati, 2010). Bixin is also effective as a catcher Radical Oxygen Species (ROS), which acts as a protective agent against free radicals (Suparmi, 2007).

In general, this present study is aimed at evaluating the effect of MJ protein as photoprotector against UVB irradiation and the chemoprevention againts skin cancer in vivo, especially to determine whether MJ protein posses protection against inflammation (inflammation-associated oedema) induced by UVB radiation; determine the potential of MJ protein to protect against UVB- induced immunosuppression and to reveal its effect on photoreceptor,

MATERIAL AND METHODS

Material

Fresh seeds of *Bixa orellana* L. were collected from Salatiga, Indonesia in 2013. A voucher specimen was deposited in the Biological Laboratory of Universitas Islam sultan Agung, semarang, Indonesia.

Mice

Fifty male BALB/c mice, aged about 6 weeks, were obtained from breeding colony of the Integrated Research and Testing Laboratory at the Gadjah Mada University. The mice were distributed into 5 experimental groups of 5 mice. They were kept under conventional animal house condition, 10 per cage, at room temperature. The mice were fed with standard laboratory mouse pellet and tap water ad libitum. Approval by the Ethical Committee of Health and Medical Research, Universitas Islam Sultan Agung was obtained before these studies commenced.

Bixin extract preparation

Fresh seeds of *B. orellana L* (200 gram) were mix with acetone as solvent, $CaCO_3$ as neutralizing agent and ascorbic acid as antioxidant. The mixture were maserate and stiring with *magnetic stirer* for 1 h. The filtrate were evaporate and dryed with N_2 gas flow (Suparmi *et al*., 2007). The result is a crude extract.

Bixin lotion preparation

The bixin lotion were made by mixing the crude extract with base lotion which consists of stearyl alcohol, vaselinum album, propilene glicol, sodium lauryl sulphate, nipagin and aquadest. The bixin lotion were topically applied at the dorsum of mouse 0.1 ml with the dose of 125, 2.5 and 0.05 µg.

Pretreatment and treatment with Bixin lotion

All mice were shaved on the dorsal site and distributed into 5 groups of 5. Three groups of 5 mice received pretreatment with topical application of Bixin lotion for 10 days (once a day) with the dose of 125, 2.5 and 0.05 µg, in 0.1 mL volume, respectively. One group was pretreated with base lotion for negative control. The rest was allowed without any pretreatment for normal control.

The treatment regime comprised application of lotion immediately after each daily UVB exposure (days 1-3). Topical application of the lotion was then continued on days 4 and 5, i.e. for 2 days after the last irradiation.

UVB irradiation.

Narrow band UVB was provided by 3 tubes of Ultraviolet-B Philips® 40W/12RS. The irradiance at the mouse dorsum was measured using an UV-meter, and recorded as 1

mWatt/cm^2 UVB. Mice were exposed on the dorsum, to a dose providing 360 mJ/cm^2 of UVB, which is approximately one minimum erythemal dose each day for three and five consecutive days to study UVB-induced inflammation and UVB-induced immunosuppression, respectively.

Inflammation-associated edema

Edema was measured as the middorsal skinfold thickness, using a micrometer (Prohex, Germany), before and at 24 h intervals following irradiation. The average skinfold thickness was obtained at the peak of the response (at 48 h after irradiation) for each group and statistical significance between the different treatments was assessed using Tukey's test (SPSS 13.0 for Windows). The measurements were repeated numerous times with the same results of which a typical example is presented here.

Inductions of CHS

The CHS response was induced by sensitization on the abdomen with 0.1 mL of freshly prepared 2% (wt/vol) oxazolone (Sigma) in ethanol on days 8 and 9 following treatment with UVB as previously described (Widyarini, 2001). Mice were challenged on day 15 by painting both outer and inner surfaces of each pinna with 5 μL freshly prepared 2% oxazolone. The maximum ear thickness was determined by measuring with the micrometer 18-20 later, and the average ear swelling was calculated as the difference from the average prechallenge ear thickness. The CHS responses were compared with mice that had not received UVB radiation, and the percentage suppression by the UVB was calculated as :

%suppression =
100 - [average ear swelling in UVB mice] : [average ear swelling in non-UVB mice] x 100%

Statistical significance between the different treatments was assessed using Tukey's test. The experiments were repeated at least twice with the similar results. As the control CHS reaction varies slightly from one study to another, results of single experiment are presented here.

RESULTS AND DISCUSSION

A. The Protection Againts UVB-induced Inflammation

The effect of Bixin lotion treatment at various doses after exposure UVB for 9 minutes, causes the middorsal skinfold thickness at 24 hours, 48 hours and 72 hours after the first UVB exposure is different from that in untreated mice. The control with base lotion group (untreated

mice) had a highest average middorsal skinfold thickness compared with the group of treated mice with various doses of Bixin lotion (Table 1).

Table 1. The Average Middorsal Skinfold Thickness in Different Group

Group	The mean difference skinfold thickness (mm) after UVB exposure		
	24 hours	48 hours	72 hours
Base lotion	0.87	1.63	1.84
Bixin lotion 0.05 µg	0.79	1.19	1.21
Bixin lotion 2.5 µg	0.41	0.97	1.05
Bixin lotion 125 µg	0.60	0.91	0.97

The trend of increase in middorsal skinfold thickness shows that the pattern is in the same direction with the exposure UVB but there is a qualitative difference among groups. The middorsal skinfold thickness was started at 24 hours following UVB irradiation, but the peak is occure at 72 hours. The mean difference of the middorsal skinfold thickness on 72 hours after UVB irradiation is highest for the base lotion group (control), then it is followed by the group treated with Bixin lotion 0.05 µg; 2.5 µg and125 µg respectively (Figure1).

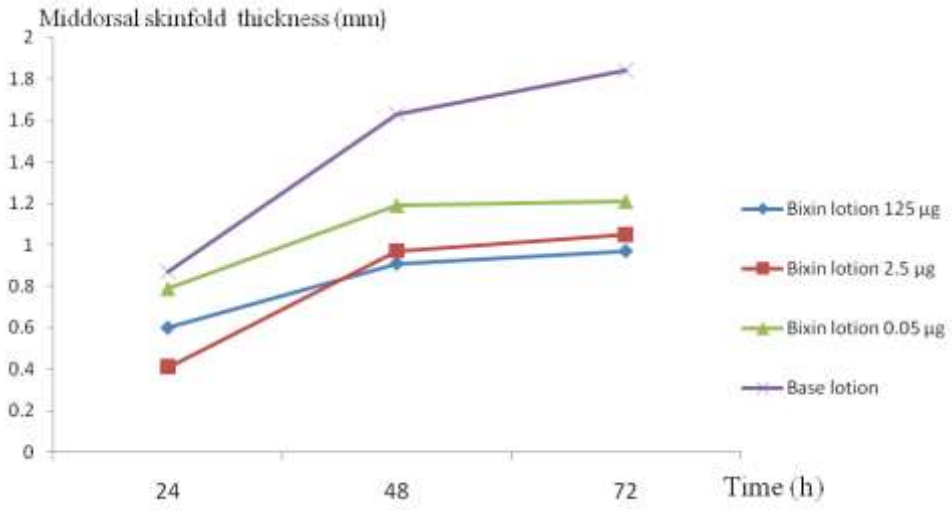

Fig 1. Profile of protective effect of Bixin lotion (125; 2.5 and 0.05 µg) against UVB-induced inflammation (UVB 360 mJ/cm^2, 1 x per day for 3 days), expressed as the average middorsal skinfold thickness in groups of five mice.

The oneway Anova analysis of the middorsal skinfold thickness of mice at 72 hours after UVB irradiation shows the significant differences in it among the groups (p=0,05), and the LSD Test toward all groups shows the significant differences between the base lotion (control)

group and the all doses of Bixin lotion groups, nevertheless there is no significant differences among the various doses of Bixin lotion groups.

This study proves that Bixin lotion can reduce the UVB-induced inflammation. Meanwhile the effect of anti-inflammation depends on how much the doses are used (dose dependent). Even though the mechanism of the reduction of inflammation not yet elaborated in this research, depend on previous study the possible mechanism is pass through the Cyclooxygenase (COX) inhibitory. The bixin may inhibit the COX enzyme resulting the reduction of Prostaglandin (PG) E_2 synthesis. UVB radiation can exaggerate the COX enzyme to increase PGE_2 synthesis that leading the process of inflammation along with the existence of erythema and sunburn (Ichihashi, 2009). Besides that, UVB radiation also causing DNA damage directly and indirectly. The damage on DNA results the skin cancer (Ueda *et al*., 2000; Keum *et al* 2012).

The factor of immune also triggers the process of inflammation because of the exposure of UVB. UVB can activate the production of TNFα and *proinflammatory* sitokin agent such as IL-1, IL-6 which can increase the process of melanogenesis (Ichihashi., 2009). Besides melanogenesis, UVB on skin can change to be ROS. The bad effect of this oxidative can generate DNA mutation and the progressive cancer (Gulam & Haseeb, 2006; Jung et al, 2008).

The result of this research is similar to Junior et al (2005) that shows that bixin isolated from *B. orellana L.* seeds has the effectiveness of antioxidant in quencher ROS (Suparmi & Martosupono, 2008). The using of Bixin lotion in all various doses can minimize the skin inflammation on UVB irradiation mice. This antiinflammation effect also consistent with the previous study in vitro reported by Reddy *et al* (2005) that bixin isolated from *B. orellana* L seeds can lessen the enzyme of COX 1 and COX 2 which diminish the PG synthesis, following by reduction of inflammation.

B. The Protection Againts UVB-induced Immunoupression

In this research, the protection to CHS supression was measured at 16 hours after UVB irradiation, when immunosupression at base lotion group (control) is maximum, meanwhile the Bixin lotion groups, have the maximal protection agains UVB-induced immunosupression. Imune respon was measure as contact hypersensitivity (CHS) respon described as the differences ratio of ear thickness after and before the challenge with oxasolon toward UVB irradiated and non irradiated mice. UVB will decrease the immune respon, so the ear edema

because of oxasolon challenge is also lessen, meanwhile bixin lotion gives protection to immune supression respond caused by UVB exposure.

This research finds that topical bixin lotion can reduce CHS respon. CHS respon at control group is 34,22% reduced to 11.4; 0.5 and -67% by Bixin lotion at the dose of 0.5 µg; 2.5 µg and 125 µg respectively (Table 2, figure 2). The result of dependent T test between mice with exposure UVB and no exposure UVB show the significant difference in control group and 125 doses group ($p<0.05$)

Table 2. The protective effect of topical bixin lotion to CHS suppression induced by UVB

Doses	UVB	non-UVB	Immune Supression (%)
Bixin lotion 125 µg	45.2	27	-67
Bixin lotion 2.5 µg	20	20.1	0,5
Bixin lotion 0.05 µg	22.7	26	11,54
Base lotion	22.4	34	34,22

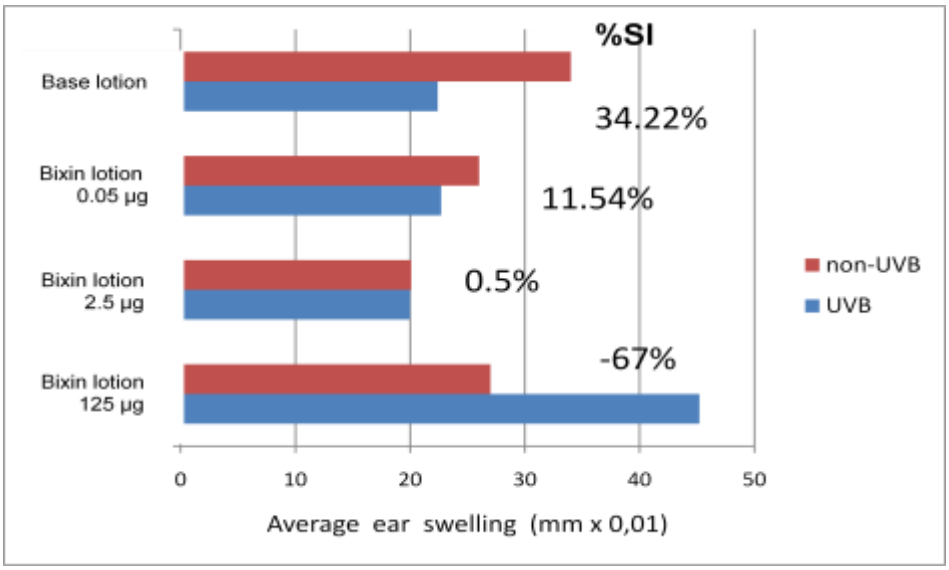

Figure 2. The protective effect of topical Bixin lotion (0.05-125 µg) to CHS supression induced by UVB, measured at at 16 hours after UVB irradiation. The data expressed as average ear swelling as a contact hypersensitivity (CHS) respon in a group containing 5 mice compared with the control (unexposured by UVB) mice. The result of dependent T-Test indicating the significant difference between mice with UVB exposure and no UVB exposure ($p<0,05$)

The mechanism of Bixin lotion toward inflammation and immune suppression after the UVB exposure can not be explained from this research. But it is assumed that there are some mechanisms are involved. The protection mechanism toward the immune suppresion can be described as follows: first, Bixin lotion will reduce the DNA damage. The damage of DNA aftermath the UV radiation is the building of pirimidin dimer can initiate the immune suppression systemic toward mencit (Kripke *et al.*, 1992). Thus DNA causes many cytokine out as a immunity factor, such as interleukin-1 (IL-1), IL-10, *Tumor Necrotic Factor* (TNF)-α and can make *trans-urocanic acid* (*trans*-UCA) isomeration to *cis. cis*-UCA form as an immunosupressor (Schwarz and Schwarz, 2002).

The second chance, it is based on the work of anti-oxidant which cahnges the radical enzyme with catalyze enzyme. With those anti-oxidant activities, the radical things will be netralized so it can not cause per-oxidant membran lipid. Therefore, the immunity from the membran level will not distrub and develop to be immune suppression. The similar anti-oxodant from genisten can stimulate SOD (Cai and Wei, 1996) so it cut down immune suppression because of UVB.

Moreover protection mechanism toward inflammation causes the exposure UVB roled by Bixin lotion through the reducing the mast cell number. It is similar to the former research (no data). Histamin on the mast cell stimulates the production of prostaglandin E_2 (PGE_2) and keratinosit. PGE_2 IL-10, but it will cut down IL-12 (Ch'ng *et al.,* 2006; Sheng, 2006).Histamin also forces the ability from T –cell suppressor with collaboration with reseptor $H_{2,}$ and produces IL-10 with the higher level and makes induction apoptosis from APC (Ch'ng *et al.,* 2006).Therefore, the reducing of the mast cell number from MJ protein will decrease inflammation respond. Some possibility of protection mechanism of MJ protein to UVB radiation as described above must take a confirmation at MJ protein involvement in DNA damage recovery system..

CONCLUSION

Bixin lotion had potential to reduce the inflammatory edema reaction and the suppression of CHS of mice induced by UVB radiation.

This study has present evidence in mice that topical Bixin lotion acts as photoprotector against UVB radiation describes by the reduction on UVB-induced inflammation and restoration on UVB-induced immunosuppression.

Because of the correlation between the inflammation and immonosuppression caused by UV and photocarcinogenesis, this study indicating that Bixin lotion may have a prospect as photo-protective agent in cosmetic and as chemopreventive agent in skin carcinogenesis.

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