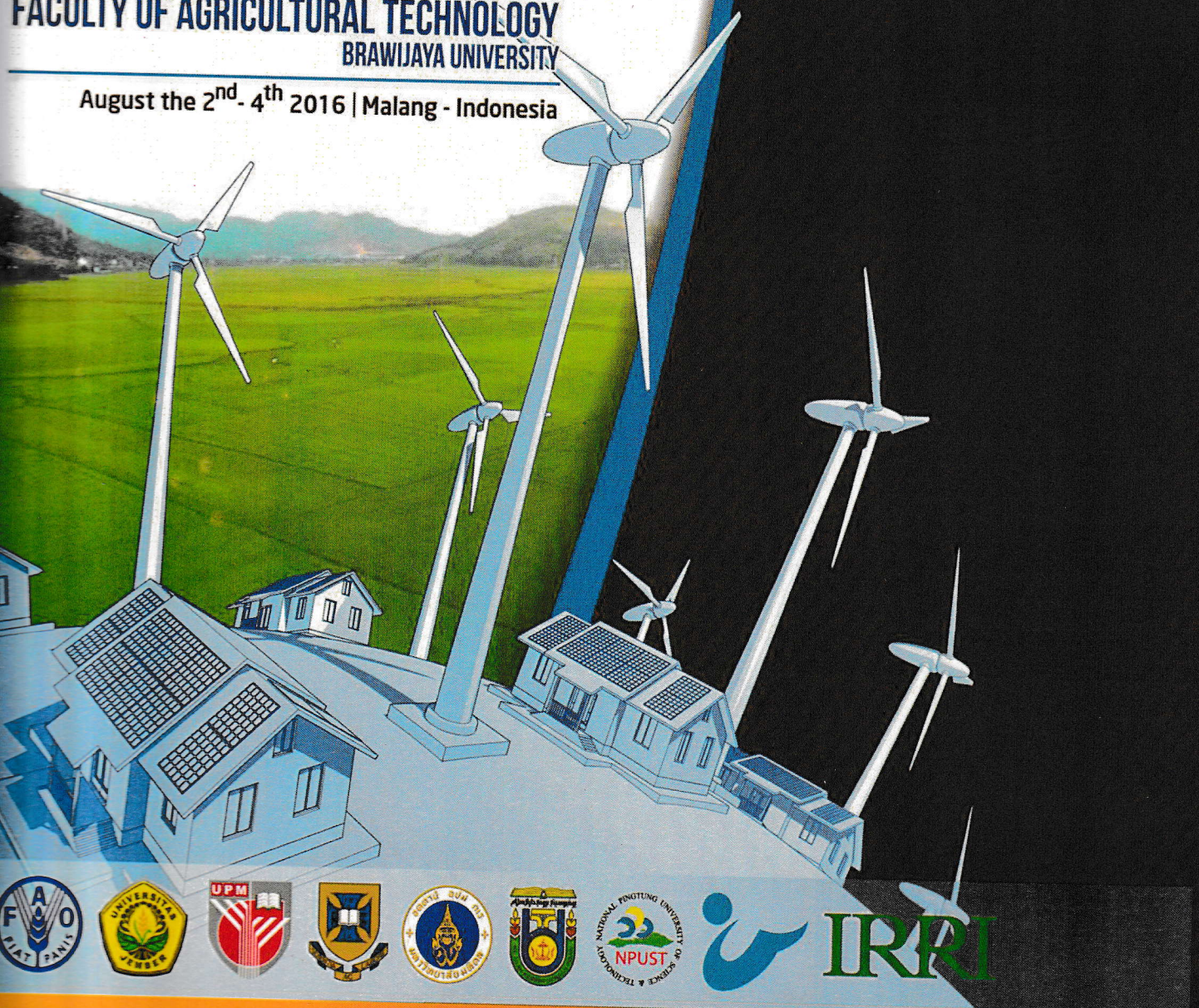
Rifda Naufalin

THE 2nd INTERNATIONAL CONFERENCE on FOOD, AGRICULTURE, and NATURAL RESOURCES 2016

Exploring local potential for strengthening food and energy security through sustainable agriculture and natural resources

FACULTY OF AGRICULTURAL TECHNOLOGY
BRAWIJAYA UNIVERSITY

August the 2nd- 4th 2016 | Malang - Indonesia



CONFERENCE PROCEEDING
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PROCEEDING

THE 2ND INTERNATIONAL CONFERENCE ON FOOD, AGRICULTURE AND NATURAL RESOURCES 2016

FACULTY OF AGRICULTURAL TECHNOLOGY
BRAWIJAYA UNIVERSITY

PROCEEDING THE 2ND INTERNATIONAL CONFERENCE
ON FOOD, AGROCULTURE AND NATURAL RESOURCES 2016:

EKSPLORING LOCAL POTENTIAL FOR STRENGTHENING
FOOD AND ENERGY SECURITY THROUGH
SUSTAINABLE AGRICULTURE AND NATURAL RESOURCES

August the 2nd -4th 2016, Malang, Indonesia

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PREFACE

By 2050, global demand for energy will nearly double while water and food demand is projected to increase by 50-60% along with the growth of the population, industrialization, modernization and the growth of various sectors that support our modern civilization. To provide the world with sufficient amount of energy, water and food today and for future generation presents a tremendous challenge. The limited amount of natural resources and the competing use between sectors are worsened by the severe effect of global climate change. The environment is degraded due to deforestation and land-use for agriculture leading to water scarcity, suggesting a trade-off between the need to increase crops/food production and the need of fresh water and desirable environment, ironically both are essential for humans' well-being. Thus, a more integrated and multi-dimensional approach as well as a coordinated management to address the complex and interrelated nature of the resources system are needed, to bridge the gap between natural environment and human activities and to synergize and balance the use of limited resources to meet the user's need of water, energy and food sustainably.
The objectives of this conference are:

1. To provide a platform for researchers, governments and professionals working on energy system, agriculture system (including livestock production and fisheries), food system, forestry, environment, global climate, natural resources and other related-fields to achieve the energy, food and natural resources security and sustainability.
2. To construct a more integrated approach between sectors in solving the complex problem of energy, food, water security and sustainability by taking in to account the limited natural resources and the preservation of the desirable environment.
3. To set-up collaboration between countries in the Asia-Pacific region as well as with other countries in the world in addressing the global issue.

The contribution of researchers of different area of studies from countries in Asia-Pacific region is described in this book.
We wish you all enjoy the conference.

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FULL-PROGRAMME OF THE 2nd INTERNATIONAL CONFERENCE ON FOOD, AGRICULTURE AND NATURAL RESOURCES

Day I: Tuesday, 2nd August 2016

Widya Loka Convention Hall – Universitas Brawijaya

TIME	PROGRAMME	PIC
07:30-08:25	Registration and Coffee Morning	Committee
08:25-08:45	Welcome Ceremony - Indonesian National Anthem - Traditional Dance	
08:45-09:05	Opening Speech	• Chairman of the conference • Dean of Faculty of Agricultural Technology-Universitas Brawijaya • Chairman of the FANRes Network • Rector of Universitas Brawijaya
Plenary Session : Food, Agriculture and Energy Policy		
09:05-09.35	Session 1	Prof. Dr. Percy E. Sajise
09:35-10:05	Session 2	Dr. Valerien Pede
10:05-10:35	Session 3	Dr. Roy Sparringa
10:35-11:05	Panel Discussion	Moderator: Prof. Dr. Ir. Harijono

Widya Loka Convention Hall – Universitas Brawijaya

Plenary Session : Food, Agriculture and Energy Policy		
11:05-11:35	Session 4	Prof. Dr. Mad Nasir Shamsudin
11:35-12:05	Session 5	Dr. Thanakorn Naenna
12:05:12:35	Session 6	Prof. Dr. Y.H. Taufiq-Yap
12:35-13:05	Panel Discussion	Moderator: Dr. Aji Sutrisno
13:05-14:00	Lunch Break	

Day I: Tuesday, 2nd August 2016
Venue: Widya Loka Convention Hall – Universitas Brawijaya

Parallel Session: Symposium on Food and Agroindustrial Management		
14:00-14:35	Session 1	Prof. Dr. Bhesh Bhandari
14:35-15:05	Session 2	Prof. Dr. Jenshinn Lin
15:05-15:35	Session 3	Prof. Dr. Simon B. Widjanarko
15:35-16:05	Panel Discussion	Moderator: Dr. Joni Kusnadi
	Coffee Break	

Day I : Tuesday, 2nd August 2016
Venue : Aula of The Faculty of Agricultural Technology (2nd Floor)
Universitas Brawijaya

Parallel Session: Symposium on Agriculture, Energy and Environment		
14:00-14:35	Session 1	Dr. Rosnah Abdullah
14:35-15:05	Session 2	Prof. Dr. Yo-Chia Chen
15:05-15:35	Session 3	Prof. Dr. Toshifumi Sakaguchi
15:35-16:05	Discussion	Moderator: Dr. Bambang Susilo
	Coffee Break	

Day I: Tuesday, 2nd August 2016
Venue: Meeting Room of The Faculty of Agricultural Technology (8th Floor) - Universitas Brawijaya

Executive Meeting		
14:00-14:05	Opening	Moderator: Dr. Tunjung Mahatmanto
14:05-16:05	FANRes Delegates Executive Meeting	Dr. Yuli Witono

Day 2: Wednesday, 3rd August 2016

Faculty of Agricultural Technology (Class Rooms and Hall)

TIME	PROGRAMME	VENUE
07:30-08:30	Registration and Coffee Morning Exhibition Poster Presentation	Committee – Hall of The Faculty (First Floor)
08:30-11:30	Parallel Sessions for Agroindustrial Management Group	1st Floor of the faculty building: Room I (Class Room F1.1) Room 2 (Class Room F1.2)
08:30-11:30	Parallel Sessions for Food Science and Technology Group	2nd Floor of the faculty building: Room 3 (Class Room F2.1) Room 4 (Class Room F2.2) Room 5 (Class Room F2.3) Room 6 (Class Room F2.4) Room 7 (Class Room F2.5) Room 8 (Class Room F2.6)
08:30-11:30	Parallel Sessions for Agricultural Science	3rd Floor of the faculty building: Room 9 (Class Room F3.1) Room 10 (Class Room F3.2) Room 11 (Class Room F3.3) Room 12 (Class Room F3.4)
08:30-11:30	Parallel Sessions for Agricultural Engineering	4th Floor of the faculty building: Room 13 (Class Room F4.1) Room 14 (Class Room F4.2)
08:30-11:30	Parallel Sessions for Energy and Environment	4th Floor of the faculty building: Romm 15 (Class Room F4.3) Room 16 (Class Room F4.4)
11:30-13:00	Closing Ceremony Lunch	Aula of Faculty of Agricultural Technology
14:00-17:00	Batu City Tour Agroindustrial visit	Batu

Day 3: Thursday, 4th August 2016

Excursion (optional)

TIME	PROGRAMME	VENUE
07:00-08:00	Tour Preparation	Committee – Hall of The Faculty (First Floor)
08:00-12:00	Excursion	Batu

FOOD SCIENCE AND TECHNOLOGY (FS)

NO.	CODE	NAME	TITLE	TYPE OF PRESENTATION	UNIVERSITY
1	**FS-001**	Rusdah	ANTIOXIDATIVE PEPTIDE FROM TEMPE	Oral and Poster	Bogor Agricultural University (IPB)
2	**FS-002**	Dr. Farapti	UNDERSTANDING SODIUM AND POTASSIUM CONTENT OF COCONUT WATER AND THE ROLE AS HEALTHY FOOD	Oral	Airlangga University
3	**FS-003**	Dr. Wenny Bekti	CHEMOMETRIC MODELLING OF COFFEE FLAVOUR	Oral	The University of Queensland/ Brawijaya University
4	**FS-004**	Mohd Nazri	PHYSICOCHEMICAL AND CAROTENOID COMPOSITION OF PEELS, PULP AND ARILS OF *Momordica cochinchinensis* SPRENG FRUITS GROWN IN MALAYSIA	Oral	Universiti Malaysia Sabah
5	**FS-005**	Anis Khairunnisa,	THE EFFECT OF USING COMBINING ALBEDO AND AGAR POWDER FOR PHYSICOCHEMICAL OF WATERMELON FRUIT LEATHER	Flash-Oral	Bogor Agricultural University (IPB)
6	**FS-006**	Aryanis Mutia Zahra	CHARACTERISTICS OF WATERGLASS FROM LAMPUNG SILICA SAND VIA ALKALI FUSIONWITH SODIUM HYDROXIDE AND ITS APPLICATION ON POSTHARVEST HANDLING OF TOMATO (*Solanum lycopersicum*)	Flash-Oral	Brawijaya University
7	**FS-007**	Satiti Kawuri Putri	RECEPTIVITY OF LAMBAK DRIED FISH AS AN ADDED VALUE OF LOCAL PRODUCTS OF JAMBI	Flash-Oral	Bogor Agricultural University (IPB)
8	**FS-008**	Diah Nuri	PERFORMANCE TEST OF "DEEPTECH MACHINE" WITH DEEP FAT FRYING TECHNOLOGY FOR FISH SHREDDED	Flash-Oral	Universitas Brawijaya
9	**FS-009**	Rima Ayu Disca Yulinda	STUDY OF NUTRIENT CHARACTERISTICS, ANTI NUTRITIONAL FACTOR AND ANTIOXIDANT ACTIVITY IN PEELED SWORD BEAN (*Canavalia gladiata* L.) USING VARIOUS PRE-TREATMENT	Oral and Poster	Bogor Agricultural University (IPB)
10	**FS-010**	Muhammad Alvian_ Sheisa Fitria Saverina	GO BABY HEALTH" THE PREVENTION MOVEMENT AND BAD NUTRITION REHABILITATION FOR TODDLERS THROUGH *SOPAN* COMBINATION (SOCIALIZATION AND AWARENESS) AND PMT-P (ADDITIONAL RECOVERY FOOD AND COMPLEMENT FOOD) IN NGEBRUK VILLAGE, SUMBERPUCUNG SUB-DISTRICT, MALANG DISTRICT	Flash-Oral	Universitas Brawijaya
11	**FS-011**	Dr. Endang Noerhartati	FLAKE SORGHUM (*Sorghum sp*): STUDY ON TYPE AND CONCENTRATION OF SORGHUM FLOUR	Oral	University of Wijaya Kusuma Surabaya
12	**FS-012**	Dr. Pavalee Chompoorat	DEVELOPMENT OF HIGH NUTRITION AND FUNCTIONAL CUPCAKE FOR OLDER ADULTS	Oral	Maejo University - Thailand
13	**FS-013**	Dr. Alwani Hamad	THE USE OF BAY-LEAF ESSENTIAL OIL AS RAW CHICKEN'S NATURAL PRESERVATIVE	Oral	University of Muhammadiyah Purwokerto
14	**FS-014**	Alif Ummami	PRODUCTION OF OMEGA 3 AND OMEGA 6 FROM FERMENTATION PROCCES OF OVERRIPE BANANA WASTE USING *Rhodotorula Glutinis InaCC y110*	Flash-Oral	Universitas Brawijaya
15	**FS-015**	Ana Fairuza Fajriana	THE EFFECT OF BRAN AND MSG (*MONOSODIUM* GLUTAMATE) ADDITION TO PRODUCE RED PIGMENTS AND LOVASTATIN OF ANGKAK ON RICE IR 64	Flash-Oral	Universitas Brawijaya
16	**FS-016**	Ahfad Ulhidayati	MICROALGAE *Nannochloropsis sp.* EXPLORATION IN SUPER FOOD PRODUCTION IN SINGLE CELL PROTEIN FORM AS AN ALTERNATIVE FUNCTIONAL FOOD SOURCE TO OVERCOME MALNUTRITION AND FOOD INSECURITY IN INDONESIA USING TOFU WASTE	Flash-Oral	Universitas Brawijaya
17	**FS-017**	Ikhtiar Eka Prasetyani	EXTRACTION AND ENCAPSULATION OF BUTTERFLY PEA (*Clitoria ternatea*) PETALS IN CROSS-LINKED ALGINATE MATRICES BY COACERVATION TECHNIQUE	Flash-Oral	Universitas Brawijaya
18	**FS-018**	Mas Wisnu Aninditya	SYSTEM DESIGN OF YOGHURT BIOREACTOR CONTROL USING DS18B20 SENSOR AND E201C9 pH TYPE WITH FUZZY METHOD	Flash-Oral	Universitas Brawijaya

NO.	CODE	NAME	TITLE	TYPE OF PRESENTATION	UNIVERSITY
19	**FS-019**	Sulistya Eka Putri	UPGRADING NUTRITIONAL STATUS AND IMAGE OF TRADITIONAL FOOD CENIL WITH INGREDIENT AND SHAPE REFORMULATION	Flash-Oral	Universitas Brawijaya
20	**FS-020**	Ahmad Habib Elfikri	OSMOTIC SALTED EGG MAKER TECHNOLOGY, SALTED TOOL-BASED EGG OSMOSIS AS SOLUTION INCREASES EFFECTIVENESS AND EFFICIENCY OF THE SALTING PROCESS	Flash-Oral	Universitas Brawijaya
21	**FS-021**	Haniful Razi and Fajriyana	"CENDOK BESI" (WATER HYACINTH AND TREMBESI) ANTI MICROBIAL BASED-MODERN CATERING FOOD PACKAGING INNOVATION	Flash-Oral	Universitas Brawijaya
22	**FS-022**	Dr. Umi Purwandari	TEXTURAL AND COOKING CHARACTERISTICS OF GLUTEN FREE NOODLES MADE FROM FLOUR OF UN-GERMINATED OR GERMINATED YELLOW PEA OR CHICKPEA	Oral	Universitas Trunojoyo
23	**FS-023**	Maria Florencia Puspitasari Schonherr	*CRESPATECH*-CRACKED EGG SEPARATOR AND PASTEURIZATION TECHNOLOGY, APPLICATION EGG PASTEURIZATION TECHNOLOGY TO INCREASE PRICE OF CRACKED EGG AT UKM GALIH PUTRA, TLEKUNG VILLAGE, JUNREJO, BATU CITY	Flash-Oral	Universitas Brawijaya
24	**FS-024**	Prof. Chanif Mahdi	DETECTION OF ILLGEL FOOD ADDITIVES IN VARIOUS MATERIALS OF FOOD AND SEAFOOD PRODUCTS WITH QUICK TEST SPOT METHOD AND NEGATIVE EFFECT TO THE HUMAN BODY	Oral	Universitas Brawijaya
25	**FS-025**	Dr. Herlina Marta	PRODUCTION AND CHARACTERIZATION OF MALTODEXTRIN FROM CORN STARCH BY ENZYMATIC HYDROLYSIS METHOD	Oral	Universitas Padjadjaran
26	**FS-026**	Dr. Iwan Taruna	EXPERIMENTAL COATING OF TANGERINE FRUITS USING TAPIOCA GEL IN A VARIETY OF STORAGE TEMPERATURES	Poster	University of Jember
27	**FS-027**	Dr. Tita Rialita	EFFECT OF OZONATION ON MICROBIAL POPULATION AND SENSORY CHARACTERISTICS OF WHOLE AND FRESH-CUT CARROTS DURING STORAGE	Oral	Universitas Padjadjaran
28	**FS-028**	Dr. Endrika Widyastuti	PRETREATMENT OPTIMIZATION AND CHARACTERIZATION OF GELATIN FROM YELLOWFIN TUNA (*Thunnus albacares*) BONE	Oral	Universitas Brawijaya
29	**FS-029**	Dr. Hardoko	FUNCTIONAL DRINK COUGH DEDUCTION OF KARUK LEAVES (*Piper sarmentosum* Roxb. ex Hunter), LIME (*Citrus aurantifolia* Swingle) JUICE AND HONEY	Poster	Universitas Pelita Harapan - Tangerang
30	**FS-030**	Dr. Nurul Isnaini Fitriyana	ENCAPSULATION OF ANTIOXIDANT FROM COFFEE CHERRIES EXTRACT USING ARABIC GUM COMBINED WITH OXIDIZED TAPIOCA AS ENCAPSULAN MATERIAL : APPLICATION ON KLENTIK OIL	Oral	University of Jember
31	**FS-031**	Dr. Suttiporn Pinijsuwan	DEVELOPMENT OF OPTICAL BIOSENSOR FOR OCHRATOXIN A DETECTION USING PEPTIDE PROBE AND AU-BALL LABEL	Oral	Mae Fah Luang University - Thailand
32	**FS-032**	Dr. Sudarma Dita Wijayanti	A SIMPLE AND RAPID PAPER-BASED ENZYME BIOSENSOR FOR DETECTION OF RESIDUAL PENICILLIN IN FOOD	Oral	Universitas Brawijaya
33	**FS-033**	Dr. Jaya Mahar Maligan	ACUTE TOXICITY TEST (LD_{50}) OF MARINE MICROALGAE *Tetraselmis chuii* ETHANOLIC EXTRACT AGAINST WISTAR RATS LIVER	Oral	Universitas Brawijaya
34	**FS-034**	Dr. Nur Aini	QUALITY DETERIORATION AND SHELF LIFE ESTIMATION OF CORN YOGURT PACKAGED WITH POLYETHYLENE TEREPHTHALATE	Oral	Jenderal Soedirman University
35	**FS-035**	Dr. Yuli Witono	PHYSICAL, CHEMICAL, AND FUNCTIONAL CHARACTERISTIC OF 'WADER'(*Rasbora jacobsoni*), 'BADER'(*Puintius javanicus*), AND 'PATIN'(*Pangasius hypophthalmus*) FILLET	Oral	University of Jember
36	**FS-036**	Dr. Erminawati	QUALITY EVALUATION OF COCOGHURT DRINK WITH ADDITION OF COCONUT SUGAR AND STABILIZERS	Oral	Jenderal Soedirman University
37	**FS-037**	Dr. Riska Rian Fauziah	ANTICANCER ACTIVITY OF NANOENCAPSULATED NONI (*Morinda citrifolia* L) EXTRACT	Oral	University of Jember
38	**FS-038**	Dr. Enny Karti Basuki Susiloningsih	CHEMICAL AND MICROBIOLOGICAL PROPERTIES CARROT (*Daucus carrota*) SOYGHURT	Oral	Universitas Pembangunan Nasional Veteran - Surabaya

NO.	CODE	NAME	TITLE	TYPE OF PRESENTATION	UNIVERSITY
39	**FS-039**	Dr. Rosida	CHARACTERISATION OF MODIFIED WATER YAM FLOUR (*Dioscorea alata*) MADE FROM AUTOCLAVING-COOLING CYCLES FOR BIHON PRODUCT	Oral	Universitas Pembangunan Nasional Veteran - Surabaya
40	**FS-040**	Dr. Jenny E R Markus	PHYSICOCHEMICAL AND ORGANOLETIC PROPERTIES OF ANALOG RICE FROM MAIZE	Oral	Universitas Nusa Cendana - Kupang
41	**FS-041**	Dr. Lilik Eka Radiati	EFFECT OF CARROT JUICE (*Daucus carota*, L) ON PHYSICOCHEMICAL-ORGANOLEPTIC AND MCROBOIOLICAL OF SYNBIOTIC YOGURT ICE CREAM	Oral	Universitas Brawijaya
42	**FS-042**	Dr. Yuniwaty Halim	UTILIZATION OF MUNG BEAN (*Vigna radiata* [L.] R. Wilczek) AND POHPOHAN (*Pilea melastomoides* [Poir.] Wedd) POWDERS AS PARTIAL SUBSTITUTION OF WHEAT FLOUR IN PRODUCTION OF NOODLES	Poster	Universitas Pelita Harapan - Tangerang
43	**FS-043**	Dr. Siti N. Wulan	ENERGY AND PROTEIN BIOAVAILABILITY OF EXTRUDED "PUFF DRY" PRODUCTS PREPARED WITH MAIZE AND PIGEON PEAS: THE ROLE OF NIXTAMALIZATION AND GERMINATION	Oral	Universitas Brawijaya
44	**FS-044**	Dr. Ratna Handayani	EVALUATION OF TAPIOCA-ARROWROOT COMPOSITE STARCH BASED EDIBLE FILMS AND ITS APPLICATION TO TOMATOES (*LYCOPERSICON ESCULENTUM*)	Poster	Universitas Pelita Harapan - Tangerang
45	**FS-045**	Dr. Eveline	ANTIBACTERIAL ACTIVITY AND STABILITY OF BINTARO (*Cerbera odollam* Gaertn.) LEAVES EXTRACT AGAINST FOOD BACTERIA	Oral	Universitas Pelita Harapan - Tangerang
46	**FS-046**	Dr. Zita L. Sarungallo	EFFECT OF HEAT TREATMENT TO THE YIELD AND QUALITY OF RED FRUIT (*Pandanus conoideus*) OIL DURING DRY EXTRACTION	Oral	Papua University
47	**FS-047**	Dr. Eveline	UTILIZATION OF RED KIDNEY BEANS FLOUR (*Phaseolus vulgaris* L.) IN THE MAKING OF HIGH PROTEIN MANTOU	Poster	Universitas Pelita Harapan - Tangerang
48	**FS-048**	Dr. Rifda Naufalin	THE EFFECT OF ANTIMICROBIAL KECOMBRANG (*Nicolaia speciosa*) POWDER ON THE CHEMICAL AND MICROBIOLOGICAL PROPERTIES OF TEMPE NUGGET DURING STORAGE	Oral	Jenderal Soedirman University
49	**FS-049**	Dr. Sony Suwasono	ANTIMICROBIAL ACTIVITIES OF POLYPHENOL-RICH EXTRACTS AGAINST *Streptococcus mutans* AND *Candida albicans* FROM COCOA GRANULES INFESTED BY *Conopomorpha cramerella* Snellen	Oral	University of Jember
50	**FS-050**	Dr. Efri Mardawati	KINETIC MODELLING OF THE ENZYMATIC HYDROLYSIS OF CORN STARCH TO PRODUCE GLUCOSE SYRUP USING α-AMYLASE	Oral	Universitas Padjdjaran
51	**FS-051**	Dr. Mohamad Djali	PHYTOCHEMICAL SCREENING OF *Ficus lyrata* FRUIT EXTRACT USING FRACTINATION EXTRACTION METHOD	Oral	Universitas Padjdjaran
52	**FS-052**	Ulfatu Layinatinnahdliyah Arrosyadi	ANTIOXIDANT AND ANTIHYPERTENSIVE PROPERTIES OF FUNCTIONAL BEVERAGES BASED ON DECAFFEINATED COFFEE AND MANGOSTEEN RIND	Flash-Oral	University of Jember
53	**FS-053**	Dr. Een Sukarminah	THE EFFECT OF OZONATION OF POTATO ON MICROORGANISMS REDUCTION AND PHYSICAL CHARACTERISTICS DURING STORAGE	Oral	Universitas Padjdjaran
54	**FS-054**	Hesty Nur Lailatul Khoiroh	EFFECTIVENESS OF ELF MAGNETIC FIELD STERILIZATION TECHNOLOGY (ELF-BASED FUNGUS STERILIZER) TO REDUCE CONTAMINATION RATES OF FUNGUS IN COCOA BEANS	Flash-Oral	University of Jember
55	**FS-055**	Dr. Mardiah	FORMULATION OF *READY TO DRINK* (RTD) FROM ROSELLE (*Hibiscus sabdariffa*. L) TEA AND STEVIA (*Stevia rebaudiana*) LEAF FOR DIABETICS	Oral	Juanda University - Bogor
56	**FS-056**	Dr. Hidayah Dwiyanti	BETA CAROTENE AND TOCOPHEROLS RETENTION OF COCONUT SUGAR ENRICHED WITH RED PALM OIL: INFLUENCE OF END COOKING TEMPERATURE AND MALTODEXTRIN	Oral	Jenderal Soedirman University
57	**FS-057**	Dr. Siti Irma Rahmawati	EXTRACTION OF PHYCOCYANIN FROM *Spirulina plantesis* AS BIOPIGMENT FOR HIGH ANTIOXIDANT CARBONATION SOFTDRINK	Oral	Juanda University - Bogor
58	**FS-058**	Dr. Jariyah	SENSORY EVALUATION OF BISCUIT PRODUCED	Oral	Universitas

NO.	CODE	NAME	TITLE	TYPE OF PRESENTATION	UNIVERSITY
			FROM WHEAT AND MANGROVE FRUIT FLOUR (MFF) MIXTURES		Pembangunan Nasional Veteran - Surabaya
59	**FS-059**	Dr. Karseno,	ADDITION OF NATURAL PRESERVATION ON TOTAL PHENOLIC AND ANTIOXIDANT ACTIVITY OF COCONUT SUGAR	Oral	Jenderal Soedirman University
60	**FS-060**	Dr. Kartika Yurlisa	THE ROLE OF INDIGENOUS VEGETABLES IN HOUSEHOLD FOOD SECURITY IN INDONESIA: A REVIEW	Oral	Universitas Brawijaya
61	**FS-061**	Dr. Tri Dewanti Widyaningsih	CHONDROITIN SULFATE AND GLUCOSAMINE EXTRACTION FROM CHICKEN FEET CARTILAGE	Poster	Universitas Brawijaya
62	**FS-062**	Dr. Adolf J. N. Parhusip	LACTIC ACID BACTERIA'S ROLE IN RED MELINJO PEEL FERMENTATION BEVERAGE TO INCREASE ORGANOLEPTIC VALUES AND ANTI HYPERURICEMIC BENEFITS	Poster	Universitas Pelita Harapan - Tangerang
63	**FS-063**	Dr. Jayus	THERMAL PROCESS OF WHITE MUSSEL (*Corbula faba Hinds*) CANNED AT VARIOUS TEMPERATURE AND STERILIZATION TIME	Oral	University of Jember
64	**FS-064**	Aly Firdaus Muhamad	INCREASED QUALITY AND FLAVORS OF ARABICA COFFEE THROUGH FERMENTATION USING Lactobacillus plantarum AND USING CRUDE PAPAIN IN FERMENTOR MACHINE	Flash-Oral	University of Jember
65	**FS-065**	Dr. Sri Winarti	CHARACTERISTICS OF ANALOG RICE FROM LESSER YAM TUBERS (Dioscorea esculenta L.) SUBSTITUTION WITH MOCAV FLOUR	Oral	Universitas Pembangunan Nasional Veteran - Surabaya
66	**FS-066**	Dr. Qomarudin	RHEOLOGICAL AND DYNAMIC LIGHT SCATTERING STUDY ON ALGINATE AND BETA-LACTOGLOBULIN MIXED GELS UNDER CONSTANT PRESHEARING EFFECT	Oral	Wisnuwardhana University - Malang
67	**FS-067**	Dr. Warkoyo	KINETICS OF MICROBIAL GROWTH AND CHEMICAL QUALITY DETERIORATION OF MEATBALLS WITH ACTIVE EDIBLE COATED AS A RESULT OF STORAGE TEMPERATURE	Oral	Muhammadiyah University of Malang
68	**FS-068**	Dr. Elok Zubaedah	CHEMICAL AND MICROBIOLOGICAL PROPERTIES OF KOMBUCHA FROM APPLE PEEL	Oral	Universitas Brawijaya
69	**FS-069**	Dr. Erni Sofia Murtini	EXPLORATION OF MERANG ASH POTENTIAL AS FOOD INGREDIENT: STUDY ON THE SELECTED MINERALS CONTENTS AND ITS EFFECT ON THE DAWET GEL QUALITIES	Oral	Universitas Brawijaya
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71	**FS-071**	Anastasia Intan Kurniasari	INOVATION OF CITRUS INFUSED HONEY TEA WITH ADDED ROSELLE (*Hibiscus sabdariffa* Linn.): STUDY OF CONCENTRATION OF ROSELLE AND PERIOD OF INFUSING	Poster	Universitas Brawijaya
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					Malaysia
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AGRICULTURAL ENGINEERING (AE)

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4	AE-004	Dr. Tri Rahayuningsih	EXPLORATION OF PRIMARY COLOR SOURCE FOR NATURAL COLOR BATIK	Oral	University of Wijaya Kusuma Surabaya
5	AE-005	Eka Tiyas Anggraeni	DESIGN MACHINE VISION BASED ON DRYER MACHINE FOR IMPROVING THE QUALITY OF *Gracilaria verrucosa*	Flash-Oral and Poster	Brawijaya University
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8	AE-008	Bima Adinugraha	DESIGN OF AUTOMATIC NATURAL FOOD COLOURANT EXTRACTOR MACHINEBASED ON ELECTROCONDUCTIVE HEATING TECHNOLOGY	Flash-Oral	Universitas Brawijaya
9	AE-009	Chandra Ardin Hersandi Prakoso	DESIGN OF PRETREATMENT BIOETHANOL REAKTOR MADE FROM LIGNOCELLULOSIC	Flash-Oral	Universitas Brawijaya
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11	AE-011	Alija Haydar Rabbani	"F-RAY (FRUIT SPOILAGE DELAY) "PRESERVATION MACHINE BASED ON AUTOMATIC ECO-CUMCO (EDIBLE COATING AND VACUUM COOLING) TO EXTEND SHELF LIFE OF FRESH FRUITS AND TO IMPROVE QUALITY OF LOCAL FRUITS	Flash-Oral	Universitas Brawijaya
12	AE-012	Novia Rahmawati	LAMP (LIGHTING APPLES MANIPULATION PHOTOPERIODISM) TO INCREASE APPLE PRODUCTIVITY AND QUALITY	Flash-Oral	Universitas Brawijaya
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14	AE-014	Ilham Tri Laksana and Eliza Fazira	NANOFLAVON - NANO FLAVONOIDS FORMULATION FROM EXTRACT	Flash-Oral	Universitas Brawijaya

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15	EE-015	Dr. Hasrul Satria Nur	REDUCING OF GAS EMISSSIONS BY COMBINING FERTILIZERS AND THEIR EFFECT OF CHANGES IN DIVERSITY OF SOIL FUNGI	Oral	Lambung Mangkurat University
16	EE-016	Satyaguna Rakmatulloh	THE REDUCTION OF EFFECTS OF GREENHOUSE GASES THROUGH THE UTILIZATION OF BIOGAS FROM ANIMAL WASTE AS AN ALTERNATIVE FUEL IN PANGPAJUNG VILLAGE, BANGKALAN REGENCY, EAST JAVA	Oral and Poster	Gadjah Mada University
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18	EE-018	Zainal Arif Sayid	ANALYSIS OF LANDSAT8 IMAGERY BAND COMBINATION IMPACT INTO CORAL REEF REMOTE SENSING ON SEMPU ISLAND STRAIT MALANG	Flash-Oral	Universitas Brawijaya
19	EE-019	Ayu Yunita Rohmasari, Dr. Bambang Semedi	STUDY OF SPATIAL DISTRIBUTION HEAVY METAL LEAD (Pb) AND CADMIUM (Cd) IN LEKOK COASTAL WATERS, PASURAN, INDONESIA	Oral	Universitas Brawijaya
20	EE-020	Reskyani Fajri	ASSESSING SHORELINE CHANGE USING SATELLITE - IN SITU DATA IN KUTA BEACH, BALI ISLAND	Flash-Oral	Universitas Brawijaya
21	EE-021	Dr. Nyimas Wardah	BUILDING A RESILIENT FOREST COMMUNITY (INSTITUTIONAL STRENGTHENING OF COMMUNITY GROUPS AND DEVELOPING NON TIMBER FOREST PRODUCTS/NTFPs ENTERPRISES)	Poster	GIZ Bioclime - Biodiversity and Climate Change Indonesia - Palembang
22	EE-022	Dr. Nyimas Wardah	UNDERSTANDING FOREST AS A SAFETY NET	Poster	GIZ Bioclime - Biodiversity and Climate Change Indonesia - Palembang
23	EE-023	Ms. Nurshahirah W Merican	FACTORS INFLUENCING PUBLIC'S PERCEPTION AND ATTITUDE TOWARDS SUSTAINABLE MANGROVE FOREST PROGRAMS IN MALAYSIA	Oral	Universiti Putra Malaysia

AGROINDUSTRIAL MANAGEMENT

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1	AM-001	Soveaddh Pech	FOOD LOGISTICS SERVICE PROVIDERS BUSINESS MODEL CANVAS DEVELOPMENT BASED ON SCOR MODEL: A CASE STUDY	Oral	Mahidol University
2	AM-002	Dr. Isti Fadah	IDENTIFICATION OF PROBLEMS AND POTENTIAL MAPHOME-BASED SMALL BUSINESS CASSAVA IN JEMBER REGENCY	Oral	University of Jember
3	AM-003	Dr. Diana Sulianti K Tobing	THE EFFECT OF TRANSFORMATIONAL LEADERSHIP, CAREER MANAGEMENT, AND WORK SATISFACTION ON EMPLOYEE PERFORMANCE IN PT PERKEBUNAN NUSANTARA XII EAST JAVA INDONESIA	Oral	University of Jember
4	AM-004	Dr. Wiji Utami	THE INFLUENCE OF JOB DISCIPLINE, JOB MOTIVATION AND JOB SATISFACTION TOWARD THE PERFORMANCE OF EMPLOYEES IN PT KERETA API INDONESIA (PERSERO) OPERATIONAL AREA OF 9 JEMBER	Flash-Oral	University of Jember
5	AM-005	Mohamad Reyza	URBAN FOOD LANDSCAPE ON THE	Oral and Poster	The University of

The effect of antimicrobial kecombrang (*Nicolaia speciosa*) powder on the chemical and microbiological properties of tempe nugget during storage time

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ABSTRACT

BACKGROUND
Tempe nugget is rich in nutrients, especially proteins and fats, that can support the growth of microorganisms. The growth of microorganisms can damage the dietary product. One of possible efforts to prevent microbial growth is by adding natural preservative substances. Kecombrang contains antimicrobial substances.Its inner stem, flowers and also fruits have their own potentials to inhibit microorganisms which are different one and other.
OBJECTIVE
The aim of this study was to determine the best part of kecombrang plant to produce tempe nugget with good chemical and microbial characteristics.
METHODS
This study used an experimental method of Randomized Block Design. Factors Studied factors were parts of kecombrang plants consisted of inner stem of kecombrang plant, kecombrang's flower, and kecombrang's fruit; concentrations of kecombrang powder consisted of 1%, 2% and 3%; and storage times consisted of 0, 1 and 2 weeks.
RESULTS
The result showed that the combination experimental unit that produced tempe nugget with the best chemical and microbiological characteristics was tempe nugget with 3% kecombrang's inner stems for instead of in 6 days storage time.
CONCLUSION
This tempe nugget with 3% kecombrang's inner stems for instead of in 6 days storage time had water content of 50.477%(±0.05); total titrated acid content of 0.001469%db(±0.07); total bacteria of 2.0 $x10^4$cfu/g; total mold of 3.3$x10^4$cfu/g; and total microbe of 1.0$x10^4$cfu/g.

KEYWORDS: tempe nugget, kecombrang, storage time

I. INTRODUCTION

*Nugget*is processed meat based product that is formed, cooked and freezed with addition of some additive content that allowed (BSN, 2002). Generally, people will prever practically and easily served food in a short time. Nugget can be made with variety kind of meat, such as meat from cow, chiken dan fish. Indonesian Nasional Standard 01-6683 said that chicken nugget has nutrient content: maximum water content of 60%, minimum protein content of 12%, maximum fat content 20% and maximum carbohidrat content of 25% (BSN, 2002). Beside that, nugget can also made from vegetables ingridients like tempe. Tempe has

high amount of protein, vitamin B12, antioxidant like isoflavon and other bioactive substance. During fermentation process, vitamin B12 content increased dramatically. Mineral content also increased up to 40.52% after fermentation. Most of mineral content in soybean are organic minerals that is linked with protein and another organic compound. Tempe is indicated has benefit for nutrition value and health (Astuti *et al.,* 2000). High nutrient content in nugget made this product easily damaged (perishable product) because of the microbe's higher activity and growth. Effendi and Supli (2009) said that food nutrient content can establish kind of microbes grows because kind and quantity of nutrient are needed for microbe's growth. One of possible efforts to prevent foods damage caused by microbial growth is by doing prevention.

One of prevention technique that generally used for food products is by adding additive compound like preservatives substance. Food preservatives substance is additive compound that can prevent or obstruct food damages caused by microbs (Naufalin and Herastuti, 2012). Syntetic preservative substance usage in food get special notice from government because it's include of food safety. Mass media publication about the dangerous of syntetic preservative substance usage like formalin and borax makes people prever to use natural preservatives substance because it's more safe to consume. Because of that, its necessary to find natural substances that have high potential effect of being natural preservatives substance. One of the natural substance that potential as preservative is kecombrang plant.

Naufalin and Herastuti (2013) said that chemical compound in kecombrang's fruits are alcaloids, falvonoids, glicosides, saponin, fenolic, and triterpenoid. There are may kind of kecombrang study that have done. Some of them shows that kecombrang's fruits formula has function as antimicrobes, such as it can prevent pathogenic microbes like *B. cereus, E. coli, Botytris* and *Saccharomyces sp* (Naufalin, 2013).

The aim of this study are to analyse natural preservatives compound from part of kecombrang plant with powder concentration variation that give the best chemical and microbial characteristics of nugget tempe during storage time.

II. MATERIALS AND METHODS

Research Design

This research used an experimental methode. Research design used in this study is Randomized Block Design (RBD) with 9 threatment combination and 3 repetation that give

27 experiment unit. Factors used in this study include variety part of kecombrang plant (stem, flower and fruit) and powder concentration (1%, 2%, and 3%).

Observation did on 0, 1st and 2nd week. Variabel observed in this study include microbial and chemical characteristics. Microbial characteristic includes total microbes, and chemical characteristics includes total titrated acid. Data achieved from this study then to be analysed using F test with 5% degree. If the analysis result shows diversity then continued with *Duncan's Multiple Range Test* (DMRT) with 5% degree.

***Kecombrang* flower powder processing (Naufalin, 2008).**

The kecombrang stem, flower and fruit were cut and spread on trays and dried with a blower dryer at temperature of 50^{o}C until dry. Kecombrang stem,flower and fruit which have been dried crushed in a blender until a homogeneous powder and ready to be extracted.

Tempe Nugget Making

Kecombrang natural preservative substance powder added in tempe nugget making with concentration of 1%, 2%, and 3% from the total nugget's dough used.

Tempe Nugget Storing

Tempe nugget was stored in refrigeration temperature. Observation done on 0, 1st, and 2nd week include microbial and chemical analysis.

III. RESULTS AND DISCUSSION

Total Microbes

Total microbes of tempe nugget observation result with kecombrang natural preservatives concentration treatment during storage time showed in Figure 1.

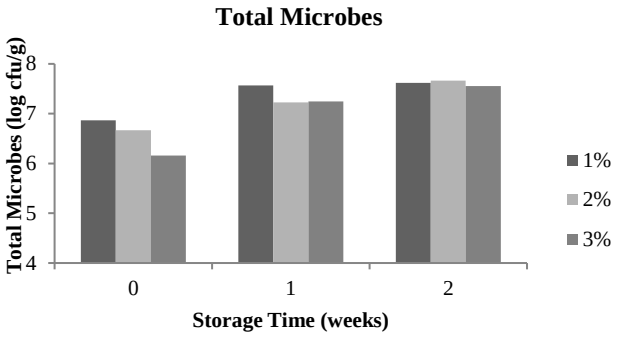

Figure 1. Effect of kecombrang powder concentration to total microbes on tempe nugget during storage time.

Figure 1 shows that total microbes in tempe nugget was increased during the storage time. Increasing the concentration of kecombrang natural preservatives powder can decrease the quantity of total microbes. This is caused by the higher preservatives substance's concentration the amount of the active compound of kecombrang on the preservatives substance is also goes higher. As the bigger the amount of active compound in preservatives substance, the effectiveness to prevent microbes activity is also increased. Active compound of kecombrang's fruits are alcaloids, saponin, tanin, fenolic, flavonoid, triterpenoid, steroid, and glicosides act actively as antioxidant (Naufalin and Herastuti, 2013).

Prevention of microbe's activity by the active compound of plants substance is caused by some factors, such as: 1) interference to the cell wall's comound substances, 2) increased of cell membran's permeability that caused lack of cell substances components, 3) inactivation of metabolic enzym, and 4) destruction genetic material fuction (Brannen and Davidson, 1993). Kanazawa *et al*. (1995) added that the process occured because of adhering the antimicrobial substance to microbes cell surface or that the substance wass difused into the cell.

Total microbes of tempe nugget observation result with part of kecombrang plant as natural preservatives treatment during storage time showed in Figure 2.

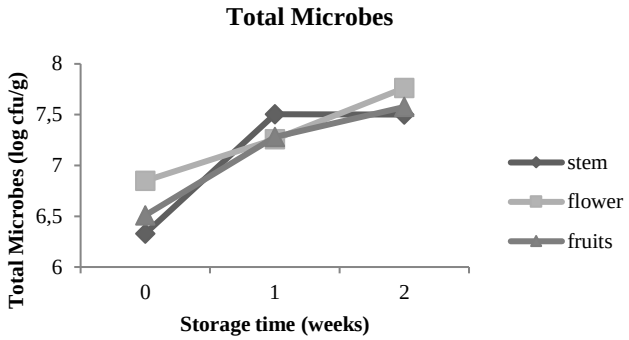

Figure 2. Effect of kecombrang plants part variation to total microbes on tempe nugget during storage time.

Addition of preservative kecombrang's flower powder decrease the total microbes more than the stem and fruits of kecombrang plant. Control (tempe nugget without kecombrang powder addition) showed that total mocrobes was increased highly during storage time (from 2 x $10^4$to 4 x 10^5cfu/g). Microbes used nutrient components in tempe nugget for their growth. Tempe nugget contains a lot of nutrient especially protein. According to Buckle *et al*. (2007), microbes grow better in cooked foods than uncooked foods. This because the nutrients was better available and competition among the microbes were decreased. Microbes that can provide protheolythics enzym can break the protein molecules become amino acides.

The average value of total bacteria on tempe nugget during the storage time 0, 1st, and 2nd weeks are 3.51x10^6; 1.95x10^7; and 1.65x10^8 cfu/g (Figure 3). Total bacteria on tempe nugget was increasing during the storage time. The average increasing value from 1st week to 2nd week is 0.927 log cfu/g. This was maybe caused by the growth and the amount of bacteria is increasing as long as the storage time. Bioactive substances will reacted with protein inside the microbes cell wall or in cytoplasma and caused protein denaturation. So that, cell membran can't regullated liquid exchange inside and outside the cell and caused lysis (Naufalin and Herastuti, 2013). As long as the storage time, antimicrobes activity is decreasing but the activity of microbes itselves are increasing. This is why the amount of microbes in tempe nugget is increasing.

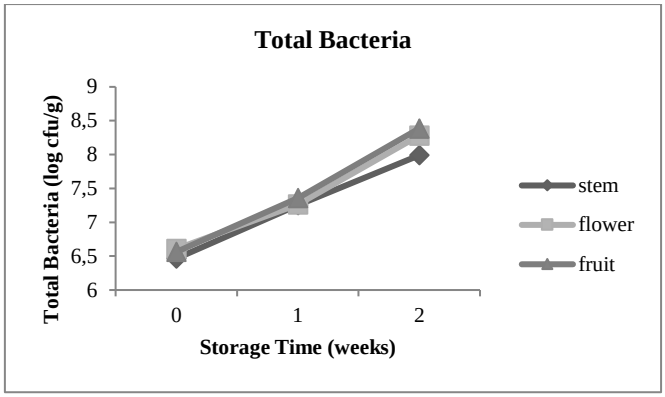

Figure 3. Effect of kecombrang plants part variation to total bacteria on tempe nugget during storage time.

The increasing of kecombrang powder concentration in tempe nugget effected on decreasing of total mold value (Figure 4). This is equal with kecombrang fruit's antimicrobial activity research on chicken nugget by Nandani (2013). This decreasing effect was perhaps caused by the higher concentration of kecombrang powder, the amount antimicrobial substances inside it is also goes higher. Zuhud et al. (2001) said that as high as the concentration of preservatives substance, so the amount of antimicrobial released is also going higher so that substance penetration into the cell is going easier. Naufalin et al. (2009) report that kecombrang contains bioactive substance such as flavonoid, triterpenoid, steroid and glicosides that have function as antimicrobia.

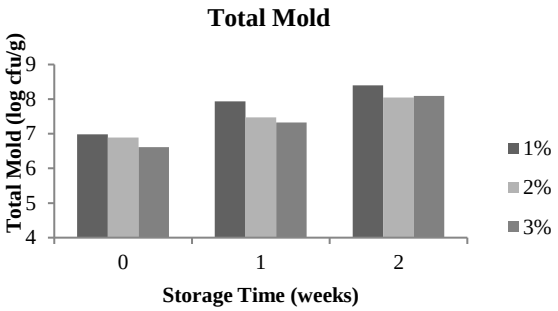

Figure 4. Effect of kecombrang powder concentration to total mold on tempe nugget during storage time

Total mold in tempe nugget was increased during the storage time (Figure 5). This is perhaps caused by growth activity of mold goes higher as long asg the storage time, so that the amount is also increasing. Fardiaz (1992) said that all of microbes live in food have heterothroph characteristic, that is need organic material to grow. Tempe is one kind of food with protein and fat high content so that tempe nugget easily contaminated.

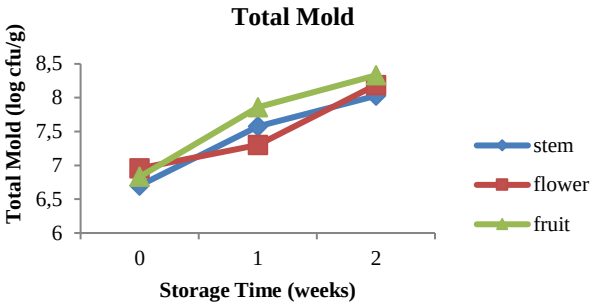

Figure 5. Effect of kecombrang plants part variation to total mold on tempe nugget during storage time.

Total titrated acid

Total titrated acid value of tempe nugget with kecombrang natural prevservatives substance powder in variety concentration during storage time is between 0.00135 %db to 0.00175 %db (figure 6 and 7).

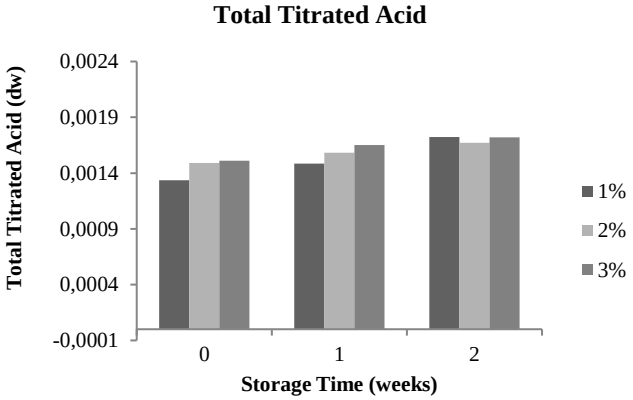

Figure 6. Effect of kecombrang powder concentration to total titrated acid on tempe nugget during storage time

Figure 6 shows that total titrated acid of tempe nugget decreased as long as the storage time and as high as the concentration of kecombrang powder added.

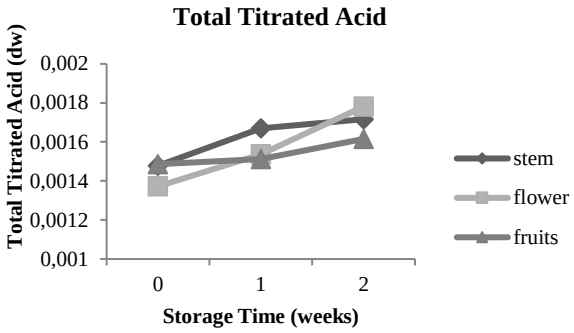

Figure 7. Effect of kecombrang plants part variation to total titrated acid on tempe nugget during storage time.

During the storage time, the value of nugget tempe is increased (Figure 7). This is because of the protein hidrolysis by the microbes that produce protheolythics enzyme to become organic substance that is sour. Buckle *et al*. (2010) said that foodstuffs that contain sugar provide energy for the microorganism metabolic process. Most of them contain those nutrients in enough amount to active growth of fermentatives organisms. Some of microbes produce lactic acids as their last metabolism product. This lactic acid will decrease pH value and cause sour flavor.

IV. CONCLUSIONS

Tempe nugget with addition of kecombrang plant's part and concentration as natural preservatives substances in tempe diversification shows a good chemical and microbial characteristics. Kecombrang powder with concentration of 3% decrease total microbes in tempe nugget more than concentration of 1% and 2% so that can longer the sotrage time of tempe nugget.

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Dear Dr. Rifda Naufalin,

We are pleased to inform you that your abstract entitled “THE EFFECT OF ANTIMICROBIAL KECOMBRANG (Nicolaia speciosa) POWDER ON THE CHEMICAL AND MICROBIOLOGICAL PROPERTIES OF TEMPE NUGGET DURING STORAGE” has been selected for ORAL presentation at The 2nd International Conference on Food, Agriculture and Natural Resources (FANRes 2016), which will be held in Malang, 2-4 August 2016. Congratulations!

Please prepare your FULL PAPER by using the template (see attachment) in Word Document (.doc) for necessary editing.
Please submit the full paper online before 7 JULY 2016.
We are looking forward to meeting you at the conference.

Best Regards,
FANRes 2016 Committee

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FACULTY OF AGRICULTURAL TECHNOLOGY
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to certify that:

Rifda Naufalin

as:

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Hari/Tangggal	:	Selasa-Rabu, 2 -3 Agustus 2016
Tempat	:	Malang Jawa Timur

Demikian surat tugas ini kami buat untuk dipergunakan sebagaimana mestinya

Purwokerto, 1 Agustus 2016

Ketua,

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