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Table of Contents

No.	TITLES AND AUTHEORS	Page No.
1	CULTURAL COMPETENCY AND PLURALISM IN EDUCATION Gail Beier	1
2	UNDERGRADUATE CREATIVITY AT A CHINESE UNIVERSITY: A U.S. FULBRIGHT STUDY IN PEDAGOGY Carol A. Mullen	6
3	SAFETY AND PROFITS IN THE AIRLINE INDUSTRY Ryan Broaderick, Lori Emmel, Krzysztof Gierczak, Ramon- Osvaldo Gonzalez	12
4	SHOULD AMERICA PHASE OUT CASH TO CURTAIL UNLAWFUL TRANSACTIONS? Reza Varjavand	19
5	PART-TIME TEACHERS DEVELOPING THEIR COORDINATORS Brad Deacon	26
6	A REVIEW OF SECLUSIVE PROTECTION OF CLOUD STORAGE RELATED TO STEGANOGRAPHY TECHNIQUES Pramneet Kaur, Shailendra Kulkarni	31
7	ISLAMIC FINANCE AND MORAL RESPONSIBILITY Abdulazeem Abozaid	38
8	TEACHERS' PERCEPTION OF EFFECTIVENESS ON SUBMISSION RATE OF DIGITAL VERSUS PAPER SUBMISSION OF HOMEWORK Adel Al-Bataineh, David Hallatt, Megan A. Huss, Catherine Unsbee	45
9	E-TRACKING SYSTEM FOR PUBLISHING COMPANY Kunyanuth Kularbphettong	51
10	CORPORATE GOVERNANCE AND EARNINGS MANAGEMENT PRACTICES IN PAKISTANI FIRMS Talat Afza, Mian Sajid Nazir	59

No.	TITLES AND AUTHEORS	Page No.
11	TECHNOLOGY DRIVEN FACULTY DEVELOPMENT-LESSONS FROM A CARIBBEAN UNIVERSITY (WITH SPECIFIC FOCUS ON JAMAICA) Alicia Palmer	66
12	FACTORS INFLUENCING THE OUTSOURCING OF CORE BUSINESS DELIVERABLES IN A SELECTED STATE OWNED ENTERPRISE IN SOUTH AFRICA Marcia Magagula, Robert Walter Dumisani Zondo	72
13	THE NEXT MOBILE REVOLUTION: NEAR FIELD COMMUNICATION Rajinder Gupta ,Shabnam Kaur, Manav Saini	79
14	A SYTEMS MODEL OF SUBJECTIVE CREATIVE WELLBEING: IMPLICATIONS FOR THE INDUSTRIALIZATION OF CREATIVITY Bob Shields	84
15	THE DRIVERS OF UNIVERSITY KNOWLEDGE TRANSFER TO FIRMS IN GHANA: A STRUCTURAL EQUATION MODELLING APPROACH Abdul-Fatahi Abdulai, Lyndon Murphy, Brychan Thomas	92
16	DEVELOPING AND SUSTAINING VOCATIONAL EDUCATIONAL TRAINING IN AFRICA: THE CORE ELEMENT John Olotewo	99
17	DO YEARS OF TEACHING EXPERIENCE REALLY MATTER IN FACULTY CONCEPTIONS AND MISCONCEPTIONS OF IMPLEMENTING HYBRID COURSES? Ramón-Osvaldo González,Elsa-Sofia Morote, Jeanne Radigan, Helen C. Wittman	107
18	DETERMINANTS OF MONETARY POLICY DYNAMICS IN SUB-SAHARA AFRICA: AN EMPIRICAL INVESTIGATION Andrew Maredza, Ebenezer Gbenga Olamide	114
19	EVALUATION OF DIFFERENTIATION AND ORIENTATION ABILITIES OF BASKETBALL PLAYERS AT DIFFERENT LEVELS OF COMPETITION Navdeep Singh Grewal	120

No.	TITLES AND AUTHEORS	Page No.
20	AN ASSESSMENT OF THE IMPACT OF YOUTHZONES (A COMMUNITY PROJECT) ON THE LIVES OF YOUTHS IN IMPOVERISHED COMMUNITES IN SOUTH AFRICA Michelle Ovens, Johan Prinsloo	128
21	CROSS TABULATION ANALYSIS OF DEMOGRAPHIC DETERMINANTS ON CREDIT ACCESSIBILITY FOR SMALL AND MEDIUM ENTERPRISES IN SOUTH AFRICA CONSTRUCTION INDUSTRY Olanrewaju Abdul Balogun , Ansary Nazeem	134
22	COOPERATIVE DRIVING THROUGH SOCIAL NETWORKS OF CARS Li-Mei Chen ,Chunlei Liu ,Jun Zhang	142
23	PERCEPTION OF PARENTAL INFLUENCE IN MARITAL CHOICE BY UNDERGRADUATES AT POINT OF GRADUATING Abolanle Olukemi Lasode ,Nike Elizabeth Tobi	149
24	GREEN HUMAN RESOURCE MANAGEMENT TOWARDS SUSTAINABLE ORGANIZATIONS: A CASE OF HIGHER EDUCATION INSTITUTIONS Muhammad Hoque, Vuyokazi Mtembu	155
25	TOURISM AND TOURISM AT HOME Anita Eves, Seo Yeon Jang	164
26	SIGNIFICANCE OF CANADA AS A SHELTER IN A PRAYER FOR OWEN MEANY Onur Kaya	171
27	BEROM LANGUAGE, CULTURAL BELIEFS AND MENTAL WELL-BEING: A QUALITATIVE STUDY Dung Ezekiel Jidong, Poul Rohleder, Rachel Tribe, Aneta Tunariu	179
28	EVALUATION OF THE PERFORMANCE FROM THE PERSPECTIVE OF THE TQM IN THE PUBLIC AND PRIVATE HOSPITAL Nada Hassan Abdelgadir Ahmed, Mutaz Elsayed, Mohamed Hafiz	189

No.	TITLES AND AUTHEORS	Page No.
29	THE USE OF RANDOM AMPLIFIED POLYMORPHIC DNA (RAPD) TO STUDY THE GENETIC VARIATION OF BIOSURFACTANT PRODUCING BACTERIA Okwujiakor, Nwaehiri Linda, Oge Mbanefo, Toochukwu Ogbulie, Chioma Okore	197
30	WOMEN, RELATIONS AND LOVE: NARRATIVES BY AMRITA PRITAM Mini Gill	206
31	INTERNET USAGE ON MOBILE PHONES OF UNIVERSITY STUDENTS Siriporn Poolsuwan	212
32	COMMUNITY-ENGAGED LEARNING AND CULTURAL DIVERSITY: TEACHING AND ASSESSING INTERCULTURAL COMPETENCE AND ADVANCED LANGUAGE SKILLS IN ONLINE FRENCH Marie-Anne Visoi	219
33	WOMEN'S PARTICIPATION IN AGRICULTURE ENTREPRENEURSHIP IN DEVELOPING COUNTRIES: WHAT A PITY! Evelyn Derera, Charles O'Neill, Maxwell Phiri	227
34	AN INVESTIGATION OF ERROR FEEDBACK WITH IMPROVEMENT STRATEGIES AND REFLECTION ON INTERNATIONAL STUDENTS' ACADEMIC WRITING Li-Mei Chen, Chunlei Liu	236
35	COLLABORATIVE WRITERS' PERFORMANCE, THEIR PERCEPTIONS OF THE TOOL-MEDIATED WRITING, AND COMMUNICATION RELATIONSHIPS Meng-Ying Daphne Lin	244
36	DIALOGIC LEARNING IN ONLINE ENVIRONMENTS: A CASE STUDY OF BRITISH A-LEVEL PHILOSOPHY STUDENTS Daniel Dennis	252

No.	TITLES AND AUTHEORS	Page No.
37	FOOD CONSUMPTION OF NIGERIANS AND HOW TO IMPROVE LIFE EXPECTANCY THROUGH WELL REVIEWED COOKING HABITS O.F. Mike-Rowland	260
38	PROFESSIONAL PREPARATION THROUGH INTERDISCIPLINARY COLLABORATIVE PROJECTS Lorrie Frear	270
39	TEACHING COMPETENCIES OF THE SECONDARY STUDENT-TEACHERS OF DMMMSU Remedios Neroza, Nona Rivera	279
40	THE EFFECTIVENESS OF MOTHERS-TRAINING PROGRAM ON CHILDREN WITH LEARNING DISABILITIES Nadia Tazi	287
41	COMPARATIVE EVALUATION OF ANTI-ALZHEIMER POTENTIAL OF SOME COMMONLY USED PLANTS AND MUSHROOM SPECIES Ravinder Kaur, Richa Shri	295
42	COMPARATIVE STUDY OF SOIL WASHING OF LEAD, ZINC AND COPPER USING BIOSURFACTANT AND SOME SOIL WASHING AGENTS Okwujiakor, Agunna Ejele, Nwaehiri Linda, Oge Mbanefo, Toochukwu Ogbulie, Chioma Okore	302
43	EFFECTS OF CORN COB FIBER ADDITION ON NOODLE PROPERTIES Nuntaporn Aukkanit , Supawan Pantong , Phikunthong Sawatwong, Jannapa Yeela	310
44	ENERGY MANAGEMENT OF REAL-TIME WIRELESS POWER TRANSMISSION PROTOTYPING A MICROSCOPIC TO MACROSCOPIC APPROACH Imtiaz Hakeem, Salimu Rehman, Abdul Waseem	318

No.	TITLES AND AUTHEORS	Page No.
45	KNOWLEDGE ACQUISITION BY SELF-LEARNING METHODS WITH STRUCTURED CLINICAL DATA Joachim Baumeister , Sebastian Furth ,Daniel Knöll , Klaus Peter Scherer	327
46	RECOMMENDATION SYSTEM FOR VISITING WEBSITES Assem A. Alsawy ,Ahmed M. Omran	334
47	CHILD IS MEANT TO LEARN NOT TO EARN: LITERATURE REVIEW ON CONTENDING CHILD LABOUR ISSUES AND CHALLENGES Aswin George , Sarmistha Nandy	341
78	FEMALE BODY AS A NARRATIVE: A CRITICAL STUDY OF JAMAICA KINCAID'S LUCY Maham Latif	350
49	FEMALE BODY AS A NARRATIVE: A CRITICAL STUDY OF JAMAICA KINCAID'S LUCY Maham Latif	359
50	THE CONFLICT BETWEEN IDEOLOGICAL CONSTRAINTS AND UTOPIAN IMPULSES IN GO TELL THE SPARTANS Tajaddin Salahaddin Noori	369
51	STORYTELLING IN MULTIDISCIPLINARY CONFERENCES J. Bonnici, Henry Greene	377
52	GROUP PROCESS SOLVES THE PROBLEMS IN LEARNING THE CONCEPT OF HAZARD ANALYSIS Jaruwan Chutrtong	386
53	CONVERSION OF THE EARTH/CONSTRUCTION OF THE TECHNOSPHERE: AN ENVIRONMENTAL ISSUE TO RIVAL GLOBAL WARMING, LOSS OF BIODIVERSITY, RESOURCE DEPLETION, ETC. Barry Wood	391
54	DEVELOPMENT OF PAMAM DENDRIMER COMPOSITE ANTI-BIOFOULING NANOFIBER MATS FOR WATER FILTRATION Ekonkar Singh Johal	399

No.	TITLES AND AUTHEORS	Page No.
55	EVALUATION OF THERMAL PROCESSES FOR REDUCTION OF SALMONELLA SPP. AND ESCHERICHIA COLI IN PORK SAUSAGES WRAPPED IN BANANA LEAVES Naruemon Prapasuwannakul, Mantana Panbualuang	406
56	ENSEMBLE DEA AND ITS COMPARISON WITH VARIABLE REDUCTION MODELS BASED ON ENTROPY MAXIMIZATION CRITERION Parag Pendharkar	412
57	IMPACTS OF FOREIGN RELIGION ON AFRICAN TRADITIONAL WORSHIP: THE IGBO EXAMPLE Egesi Jonathan	422
58	PLANT-FRUGIVORE MUTUALISM: SEED'S GREAT ESCAPE Inderdeep Kaur	430
59	DEVELOPMENT OF GLUTEN-FREE BISCUITS WITH RICEBERRY FLOUR Supatchalee Sirichokworrakit, Thanchanok Aungsirirak, Siwaporn Butmee	441
60	MAPPING THE COLONIAL CONQUER OF NATIVE MINDS: A SOCIO-HISTORIC CRITIQUE OF TURQUOISE BY AMIR HUSAIN Fauzia Janjua	449
61	TRAINING: A PANACEA OF CUSTOMER SERVICE INEFFICIENCY AND IMPOVING HOTEL PERFORMANCE AT OSOGBO, OSUN STATE, NIGERIA O.F. Mike-Rowland ,C.E. Ogunlade	458
62	CAN A MANAGEMENT AND INFORMATION SYSTEM BE AN ALTERNATIVE APPROACH TO UPSURGE EFFICIENCY FOR LOCAL ECONOMIC DEVELOPMENT PRACTICE IN KWAZULU-NATAL? Xoliswa Majola	466
63	MOTIVATIONAL FACTORS WHY STUDENTS ENROL AT DMMMSU CGS? Art Accredito Neroza , Remedios Neroza	473

No.	TITLES AND AUTHEORS	Page No.
64	THE ROLE OF LAW AND THE CHANGING FACE OF TERRORISM: A CASE STUDY OF BOKO HARAM IN NIGERIA Tarela Juliet Ike, Kofi Kufuor, John Morrison, Anthony Richards	481
65	GENDER ROLES REPRODUCED: ONLINE SHOWCASES OF NEW BRIDES' HOMES Zeynep Isil Isik Dursun	490
66	POPULATION DENSITY OF INSECT PEST ON CORN BIOMASS YIELD INTERCROP WITH LEGUMES Ferdinand S. Corpuz , Myleen Corpuz	497
67	ECOLOGICAL AWARENESS IN ALAMGIR HASHMI'S POEMS Mubina Talaat	506
68	COMPONENTS OF ETHICAL LEADERSHIP AND THEIR IMPORTANCE IN SUSTAINING ORGANIZATIONS OVER THE LONG TERM Niall Hegarty, Salvatore Moccia	513
69	DESIRE OF SHOWING VS. FEAR OF SURVEILLANCE: A QUANTITATIVE RESEARCH OVER SURVEILLANCE ATTITUDES OF FACEBOOK USERS AND NON-USERS IN TURKEY Demet Firat, Feyyaz Firat	521
70	FACTORS INFLUENCING ENTREPRENERSHIP START-UPS AMONG GRADUATE STUDENTS IN GHANA Felicity Asiedu-Appiah, Bylon Abeeku Bamfo , Courage Simon Kofi Dogbe	530
71	MAGNITUDE OF DYNAMIC PRESSURE OF SUBSONIC AIRFLOW AROUND SYMMETRIC OBJECTS Vsevolod Koryanov ,Erwin Martinez ,Shehret Tilvaldyev	539
72	THE RISE OF ISLAMIC FEMINISM: A COMPARATIVE ANALYSIS BETWEEN THE REPUBLIC OF IRAN AND SAUDI ARABIA Dalia Elsayed	546

No.	TITLES AND AUTHEORS	Page No.
73	OF 'LOVE LAWS' AND THE DYNAMICS OF POWER PLAY: GENDER AS A SUBTEXT IN ARUNDHATI ROY'S THE GOD OF SMALL THINGS Pushpinder Walia	556
74	INCREASING STUDENT MOTIVATION AND LEARNER AUTONOMY THROUGH EXTENSIVE LISTENING PORTFOLIOS Jaime Morrish	568
75	THE NEW SACRED ART MOVEMENT AND DEVELOPMENT OF NIGERIAN ART: THE OSUN OSOGBO EXPERIMENT Egunjobi Felix Babatunde	576
76	CHILD TRAFFICKING AND ITS HUMAN IMPLICATION IN ETHIOPIA: THE CASE SNNPR STATE Alemshet Adugna Addisalem	586
77	CHILD TRAFFICKING AND ITS HUMAN IMPLICATION IN ETHIOPIA: THE CASE SNNPR STATE Alemshet Adugna Addisalem	594
78	INFLUENCE OF EXERCISE ON PERSONAL HEALTH PROFILE ON THE PEOPLE OF KABBA-BUNU LGA OF KOGI STATE NIGERIA Toluse Caroline Modupe	603
79	CONSUMERS' WILLINGNESS TO CONTRIBUTE TO THE IMPLEMENTATION OF A WORKPLACE SAFETY LABEL Marjia Khanom ,Mashiur Rahman	612
80	MEDICATION SAFETY STRATEGIES: A REVIEW AND SUGGESTIONS Hoppin Shari	621
81	THE ATTITUDES OF THE COLLEGE STUDENTS TOWARD THE UTILIZATION OF BRITISH RESTORATIVE JUSTICE TECHNIQUES IN EVERYDAY POLICING Jennifer Dawe, Margaret Duda, Rebekah Gonzales, Aqeel Saeid	630

No.	TITLES AND AUTHEORS	Page No.
82	REFUGEE INFLUX AND LIVELIHOOD OF THE HOST COMMUNITIES: A CASE STUDY OF NAKIVAALE REFUGEE SETTLEMENT, UGANDA Brendah Nakuya	639
83	TOURISM DEVELOPMENT IN EU REGIONS: AN ANALYSIS OF MONITORING STRATEGIES FOR FAST GROWING VISITORS COUNTRIES Renee Yi-Mond Yuan	648
84	STUDENTS' PERFORMANCE CHALLENGES AT INTERNSHIP IN KANO STATE, NIGERIA Attamah Chukwunwike Emmanuel	656
85	THE RAMAKIEN AND THE BIBLICAL ACCOUNT OF THE COSMIC CONTROVERSY Bienvisa Ladion Nebres	665
86	EFFECT OF GROUP COUNSELLING ON YOUTHS' ATTITUDE TOWARDS EXAMINATION MALPRACTICES IN LAGOS STATE, NIGERIA Ayodeji Olawole, Mopelola Olusakin	679
87	DETERRITORIALIZATION' IN THE WASTED VIGIL BY NADEEM ASLAM Sobia Kiran	690
88	EFL TEACHING IN UNIVERSITY CLASSROOMS IN SAUDI ARABIA: A CASE STUDY OF INSTRUCTORS AND CURRICULUM AND IMPLEMENTATION FOR LANGUAGE LEARNING Dalia Jamal Alghamdi	699
89	DAUGHTERS' NARRATIVES : THE DIALECTICS OF SILENCE AND MEMORY D. Laura Dameris Chellajothi	708
90	DEVELOPMENT AND ACCEPTABILITY OF THE FRUIT KAMIAS (AVERRHOA BILIMBI) Lilia M. Pingol , Gloria T. Tariga	716

No.	TITLES AND AUTHEORS	Page No.
91	RELIGIOUS VIOLENCE AND HERDSMEN AND TERRORIST PHENOMENA IN NIGERIA: A RHETORIC OR A REALITY Mary Taiye Daniel	725
92	ADVANCING ACADEMIC LEADER IDENTITY DEVELOPMENT: USING KAUPAPA TO BRIDGE THE DIVISION BETWEEN CONFLICTING ORGANISATIONAL CULTURES Steven Marshall	734
93	MANIFEST DESTINY AND NATIVE AMERICANS Serdar Ornek	743
94	A LESSINGIAN SOLUTION TO APOCALYPTIC DOOM IN WINTERSON'S THE STONE GODS: A SUFI APPROACH Neşe Yildirim	752
95	SYKES-PICOT AND THE FAILURE OF THE MODERN ARAB STATE SYSTEM Jawaher Abdel-Hamid	761
96	THE FUNCTION OF MUSIC IN FILM: THE RELATIONSHIP BETWEEN THE IMAGE AND THE MUSIC Rengin Iskeçe	771
97	THIS TIME SING FOR FREEDOM: THE ROLE OF PROTEST SONGS IN LIBERATION MOVEMENT OF SOUTH AFRICANS Seher Gündüz	779
98	EFFECTS OF SELECTED YOGIC ASNAS AND PRANAYAMAS ON LIPOPROTEIN CHOLESTEROL ABNORMALITIES AND DIABETIC POST MENOPAUSAL WOMEN Avtar Singh Kalsi ,Prabhjot Kaur, Satpal Kaur	785
99	PALIMPSEST AND REWRITING THE CANADIAN FEMINISM IN THE HAND MAID'S TALE Onur Kaya	792

No.	TITLES AND AUTHEORS	Page No.
100	ELECTROCHEMISTRY OF PYRROLOQUINOLINE QUINONE (PQQ) ON MULTI-WALLED CARBON NANOTUBE-MODIFIED GLASSY CARBON ELECTRODES IN BIOLOGICAL BUFFERS D. A. Baum , I. Emahi , M. P. Mitchell	800
101	DEVELOPMENT OF IOT-BASED CAR PARKING MANAGEMENT SYSTEM: THE DEPLOYMENT OF MOBILE TECHNOLOGY AND INTERNET OF THINGS FRAMEWORK Shutchapol Chopvitayakun	807



Development of Gluten – Free Biscuits with Riceberry Flour

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ABSTRACT

Riceberry rice, deep purple grain; (*Oryza Sativa L.*), a cross-bred strain from the Khao Hom Nin Rice variety which is well known as containing high antioxidant properties and Khao Dawk Mali 105 well known as a fragrant rice. This study aimed to develop gluten-free biscuits with Riceberry flour. Mixture design was used to define components consisted of Riceberry flour (30-80%), rice flour (20-30%) and corn starch (5-15%). The gluten-free biscuits with Riceberry flour were investigated using sensory qualities, chemical and physical properties in comparison with the control biscuits (100% wheat flour). It was found that aw, moisture and protein contents decreased when the amount of Riceberry flour increased while ash contents increased. Adding Riceberry flour resulted lower L* (lightness), b* (yellowness) spread ratio and hardness. However, the result of this adding caused higher a* (redness). Sensory evaluation indicated that increasing Riceberry flour to gluten-free biscuits, sensory scores were decreased in all of attributes (color, odor, flavor, texture and overall acceptability).

Keywords: Riceberry flour, Biscuits, sensory evaluation

I. INTRODUCTION

Celiac disease, a disease caused by an immune disorder which is also known as gluten sensitive enteropathy, occurs in people who have a genetic problem with consumption of gluten (Mert, Sahin and Summu, 2015). It is a permanent intolerance to gluten proteins of much common cereal such as wheat, rye, barley, and oat (Sakac et al, 2016). Celiac disease affects approximately one percent of people in the world and strict gluten-free diet for a lifetime is the only available treatment (Jnawali, Kumar and Tanwar, 2016). Celiac disease is not the only disease, which is caused by the ingestion of gluten. The intolerances which also fall in the category have the umbrella term “gluten-related disorders”. The four main forms besides Celiac disease, which are summarized by the umbrella term, are: non-celiac gluten sensitivity, dermatitis herpetiformis, wheat allergy and gluten ataxia. Non-coeliac gluten sensitivity (NCGS) is the least clearly defined and researched gluten-related disorder. NCGS has been

frequently termed “gluten sensitivity” and has been described as gluten-mediated disorder. The prevalence of NCGS is estimated to be much higher than celiac disease (3–6%). NCGS has similar symptoms to celiac disease and wheat allergy and overlaps with irritable bowel syndrome. Wheat allergy is defined as an IgE-mediated immunological response to proteins of wheat and related cereals that affects the gastrointestinal tract, the respiratory tract or the skin (Morita and et al, 2016). Wheat allergy is one of the most widespread food allergies because wheat is the most widely consumed food grain in the world. The prevalence of wheat allergies in the European countries and the USA was found to be 0.2-0.9% in adults and 0.4-1.3% in children (Morita and et al, 2012). Dermatitis Herpetiformis (DH) is also known as Duhring-Brocqy disease and sometimes referred to as celiac disease of the skin. DH is characterised by urticarial plaques and blisters on the elbows, buttocks and knees. Other areas of the body can also be affected. Gluten Ataxia (GA) is one of the most common neurological manifestations attributed to celiac disease. It is like the other gluten-related disorders, an immune-mediated disease triggered by the ingestion of gluten-containing products in individuals which are genetically susceptible to it (Morita and et al, 2016). As a result, the market of gluten-free products is increasing in order to meet the needs of patients.

Rice is the staple food of Thailand. It is rich in many nutrient components including carbohydrates, proteins, certain fatty acids and micronutrients (vitamins and trace minerals). They are also sources of many bioactive non-nutrient compounds, known as an antioxidant, including phenolic compounds (Frei & Becker, 2004). Riceberry rice, deep purple grain; (*Oryza Sativa* L.), a cross-bred strain from the Khao Hom Nin Rice variety which is well known as containing high antioxidant properties and Khao Hom Mali 105 well known as a fragrant rice. It is a new breeding line developed by the Rice Research Center, Kasetsart University, Kamphaeng Saen, Nakhon Pathom, Thailand. It is a source of gamma-oryzanol, beta-carotene, niacin, thiamin, vitamin B2, anthocyanins and total phenolic compounds.

Biscuit is one of the most popularly consumed bakery products widely consumed around the world, mainly resulting from their ready to eat nature, affordable cost, good nutritional quality, availability in different tastes and longer shelf life (Raymund, Fradinho and Nunes, 2014). In recent years, gluten-free bakery food, especially bread, cake, and biscuits have been commonly investigated by many researchers. Researchers have tried to use various composite flours with added value are growing rapidly. For biscuits and the similar food type like cookies, the ingredients, such as buckwheat flour, chestnut flour, rice flour, sorghum flour, oat flour, corn flour, chickpea flour, amaranth and soybean flours have been studied so as to replace wheat flour of gluten-free bakery products and improve the nutritional value and functional properties of the product. Therefore, the objective of this project was to use Riceberry flour as an ingredient to make biscuits of high nutritional quality. The effect of Riceberry flour was investigated in terms of physicochemical, textural, and sensory of biscuits.

II. MATERIALS AND METHODS

Rice flour (Cho Heng Rice vermicelli Factory Co. Ltd.), corn flour (Uniliver (Thailand) Co.) and wheat flour (UFM All Purpose Flour) were purchased from a local market in Bangkok, Thailand. Riceberry rice was purchased Chiameng Marketing Co. Ltd.. Riceberry rice was ground to flour in a grinder and passed through an 80-mesh screen. The moisture, crude fat, crude fiber, protein and ash contents of Riceberry flour were 5.85, 0.66, 2.76, 6.56 and 1.45 g/100 g., respectively (Sirichokworrakit, Phetkhut & Khammoon, 2015). The Riceberry flour was kept in sealed container at 4°C until future analysis. All other chemicals used were reagent grade.

Biscuits Preparation

A basic recipe containing wheat flour (42%), corn flour (8%), sugar (14%), vanilla extract (0.2%), milk (9.5%), butter (26%) and salt (0.3%) was prepared. Mixture design was used to define components consisted of Riceberry flour (30-80%), rice flour (20-30%) and corn flour (5-15%) by flour weight. Three different flour mixtures were formulated as shown in Table 1. The biscuit dough was prepared by hand-mixing the butter and milk in a mixing bowl. Flour, sugar, vanilla extract and salt was added and blended in. The mixture was kneaded to form a dough. The dough was kept in plastic wrap at 4°C for 30 min. It was rolled to a thickness of about 5 mm and cut to a 3 cm diameter. The pieces were baked in greased pans at 200°C for 7 min in a baking oven. The prepared biscuits were cooled to room temperature and packed in high-density polyethylene bags.

Table 1. Recipes for biscuits preparation.

Ingredient	control	B ₁	B ₂	B ₃	B ₄	B ₅
Wheat flour	100	-	-	-	-	-
Riceberry flour	-	55	65	65	65	75
Rice Flour	-	30	20	25	30	20
Corn Flour	-	15	15	10	5	5
sugar	14	14	14	14	14	14
Vanilla extract	0.2	0.2	0.2	0.2	0.2	0.2
milk	9.5	9.5	9.5	9.5	9.5	9.5
butter	26	26	26	26	26	26
salt	0.3	0.3	0.3	0.3	0.3	0.3

Proximate Analysis

The chemical proximate compositions of Riceberry flour and donut samples were analyzed according to AOAC methods (AOAC, 2010). The a_w was determined at 25 °C using a_w meter, AquaLab Series 3 TE (Decagon Devices Inc., Pullman, Washington, U.S.A.). Approximately 3 g of the ground samples were used for the analysis.

Biscuits color analysis

The color of biscuits was measured with spectrophotometer (Hunter Lab, Color Quest XE, USA) equipped with a D65 illuminant using the CIE L* a* b* system. L* value measures brightness (0-100); a* value represents the red – green coordinates (- is green with + indicating redness) while b* value measures the blue – yellow coordinates (- is blue with + indicating yellowness) of the product. All measurements were performed in triplicate.

Biscuits texture analysis

Texture analysis was performed using a Texture Analyzer (Lloyd Instrument, TA plus, UK) with a maximum force of 1 kN. An adaptor, a cylinder with a diameter of 35 mm, was used. The biscuits were measured after 60 min of cooling. The biscuit was compressed at the center to 70% of their original height at a test speed of 1.0 mm/s. Three replicates of biscuit at each formulation were determined.

Spread ratio of biscuits

The width of biscuits was measured by laying six biscuits edge to edge with the help of a scale rotating them 90° and re-measuring the width of six biscuits in cm and then taking average value. Thickness or height of biscuits was measured by stacking six biscuits on top of one another and taking average thickness of six biscuits in cm. Spread ratio was calculated by dividing the average value of width by average value of thickness of biscuits. Percent spread ratio was calculated according to AACC method (1984) by dividing the average value of width by average value of thickness of biscuits.

Sensory Evaluation

The biscuits were measured after 30 min of cooling. All biscuits were evaluated for color, flavor, taste, texture and overall acceptability of the samples by 30 untrained panelists which consisted of students, employee and visitors of Suan Sunandha Rajabhat University (Bangkok, Thailand) using nine-point hedonic scales, where 9 = extremely like and 1 = extremely dislike. The biscuits were offered in plastic white bowls coded with random 3 digit numbers. Each panelist evaluated six samples in a balanced sequential order. The optimal ratio of Riceberry flour in the biscuits was investigated using sensory qualities in comparison to the control biscuits. Sensory evaluation was repeated on two different days.

III. RESULTS AND DISCUSSION

Proximate Compositions

The chemical compositions of gluten-free biscuits with Riceberry flour and control biscuits are presented in Table 2. The results indicated that a_w , moisture, protein and ash content were significant ($p \leq 0.05$). The moisture content of control biscuits had higher than gluten-free biscuits with Riceberry flour. The moisture content decreased when the Riceberry flour amount in the biscuits increased. The moisture content of all gluten-free biscuits was in the range of

1.06 – 2.14 g/100 g. Furthermore, a_w of control biscuits had higher than gluten-free biscuits with Riceberry flour.

Table 2. Chemical compositions of gluten-free biscuits with added Riceberry flour.

Parameter	control	B ₁	B ₂	B ₃	B ₄	B ₅
a_w	0.37±0.01 ^a	0.29±0.01 ^b	0.27±0.01 ^c	0.23±0.01 ^d	0.23±0.01 ^d	0.20±0.01 ^e
Moisture (g/100 g)	4.48±0.34 ^a	1.49±0.04 ^b	2.14±0.41 ^b	1.91±0.98 ^b	1.10±0.06 ^b	1.06±0.14 ^b
Crude fat (g/100 g) ^{ns}	25.02±0.38	25.62±0.87	25.60±0.07	26.21±0.37	24.01±0.78	25.43±0.75
Crude fiber (g/100 g) ^{ns}	0.59±0.05	0.78±0.04	0.70±0.01	0.83±0.27	0.65±0.06	0.72±0.09
Protein (g/100 g)	6.54±0.81 ^a	1.98±0.54 ^b	2.53±0.60 ^b	3.14±0.63 ^b	3.67±0.71 ^b	3.71±0.82 ^b
Ash (g/100 g)	0.64±0.34 ^c	0.89±0.60 ^b	1.01±0.53 ^b	1.34±0.46 ^a	1.40±0.41 ^a	1.45±0.28 ^a

Different superscript letters in a row indicate significant difference. ($P \leq 0.05$)

^{ns} = no significant difference ($P > 0.05$)

Values of a_w were also different ($p \leq 0.05$) for different levels of Riceberry flour and the decreased of the Riceberry flour addition. The protein content increased when the Riceberry flour amount in the gluten-free biscuits increased but protein content in control biscuits was highest due to protein content in wheat flour was higher than Riceberry flour. The ash content was obtained in the gluten-free biscuits with the addition of Riceberry flour. The control sample showed the lowest while the gluten-free biscuits containing 75% Riceberry flour possessed the highest value of the Riceberry flour. The ash content of all biscuit samples was in the range of 0.64 – 1.45 g/100 g. The biscuit samples had crude fat content of 24.01-25.62 g/100 g and crude fiber content of 0.59-0.78 g/100 g. The crude fat and crude fiber content of biscuit samples were not significant among ($P \leq 0.05$) treatments.

Physical properties

The color is one of the most important factors in determining consumer acceptance. Color characteristics of gluten-free biscuits with Riceberry flour and control biscuits are shown in Table 3. As compared between control biscuits and gluten-free biscuits with Riceberry flour, the results indicated that the color of gluten-free biscuits with Riceberry flour had lower L* and a* value than control biscuits. It was affected by the natural color of Riceberry flour used for biscuits preparation. The Riceberry flour used in this study has high anthocyanin pigment caused dark flour color (Yodmanee et al., 2011). The b* value of gluten-free biscuits decreased when the Riceberry flour amount in the biscuits increased. On the other hand, an increasing of rice flour contents related to the increased of L* value and b* value and an increasing of corn flour contents related to the decreased of a* value and increased b* value.

Table 3. Color characteristics, texture and spread ratio of gluten-free biscuits with added Riceberry flour.

Parameter	control	B ₁	B ₂	B ₃	B ₄	B ₅
L*	76.97±0.54 ^a	50.59±0.68 ^b	46.60±0.82 ^c	44.18±1.02 ^d	44.54± 0.11 ^d	40.92±0.48 ^e
a*	1.17±0.42 ^d	5.52±0.44 ^c	6.32±0.10 ^b	6.82±0.13 ^{ab}	7.04± 0.21 ^{ab}	7.11±0.45 ^a
b*	21.69±0.07 ^a	12.13±0.35 ^b	13.09±0.20 ^b	12.15±0.14 ^b	13.19± 0.16 ^b	10.47±0.56 ^c
Hardness (N)	6.70±0.17 ^a	4.10±0.10 ^c	4.50±0.10 ^b	3.26± 0.05 ^d	2.46± 0.32 ^e	1.16±0.14 ^f
Spread ratio	1.75±0.07 ^b	1.83±0.02 ^b	1.84±0.06 ^b	1.88± 0.05 ^b	1.89± 0.24 ^b	2.09±0.49 ^a

Different superscript letters in a row indicate significant difference. ($P \leq 0.05$)

RF = Riceberry flour

The texture parameters and spread ratio of biscuits with added Riceberry flour are presented in Table 3. Gluten-free biscuits with higher content of Riceberry flour had hardness lower than the control biscuits. This result is in the agreement with Chakraborty, Kumbhar, Chakraborty & Yadav (2011) who reported reduction in hardness of cookies fortified with millet flour. Spread ratio is a measure of biscuits quality. For better biscuits, higher spread ratio is desirable. Biscuits with 55-75% Riceberry flour had spread ratio similar to control biscuits ($p > 0.05$). Biscuits with 75% Riceberry flour were the highest spread ratio of all biscuits ($p \leq 0.05$). An increasing of rice and corn flour contents related to the increased of hardness and decreased of spread ratio. These results are similar to the report on cookies with corn and potato flour by Singh, Singh, Sharma & Saxena (2003). They found that the spread ratio of samples with more corn flour will be increased. This effect relates to swelling power of corn flour. In fact, it is found that for Riceberry flour concentrations, the biscuits become difficult to shape and have a substantial change in hardness, with a negative impact on the sensory assessment.

Sensory Evaluation

The biscuits were evaluated for their sensory quality characteristics color, flavor, taste, texture and overall acceptability. The results indicated that color score increased by the addition of 55-75% Riceberry flour biscuits and decreased by the addition of 75% Riceberry flour biscuits. The quantity of Riceberry flour increased, the color of biscuits darken which had an effect on color score decreased. The flavor score of biscuit increased when adding Riceberry flour but it decreased by the addition of 75% Riceberry flour. The highest taste score of biscuits were 7.20 obtained with 55% Riceberry flour, while 75% Riceberry flour resulted in the lowest taste score of biscuits of 5.93. The texture and overall acceptability scores of control biscuits were not significantly different with 55-65% Riceberry flour and decreased significantly by the addition of 75% Riceberry flour. The color, flavor, texture and overall acceptability scores of gluten-free biscuits increased with the addition corn flour increased. This finding might conclude that using the Riceberry flour as an ingredient up to 65% could obtain the similar quality and pleasant appearance as control biscuits.

Table 4. Sensory evaluation of gluten-free biscuits with added Riceberry flour.

Attribute	control	B ₁	B ₂	B ₃	B ₄	B ₅
color	7.13±1.33 ^a	7.20±1.24 ^{ab}	7.53±1.48 ^a	7.13±1.70 ^{ab}	6.63±1.59 ^{bc}	6.20±1.06 ^c
Flavor	7.37±1.43 ^{ab}	7.87±1.20 ^a	7.27±1.64 ^{ab}	7.37 ±1.48 ^{ab}	6.83±1.29 ^{bc}	6.47±1.70 ^c
Taste	7.13±0.36 ^a	7.20±0.58 ^a	6.87±0.64 ^{ab}	7.13±0.61 ^a	6.13±0.69 ^{bc}	5.93±0.69 ^c
texture	7.20±0.74 ^a	6.73±0.49 ^{ab}	6.90±0.59 ^{ab}	7.20± 0.55 ^a	6.23±0.82 ^{bc}	5.57±0.82 ^c
Overall acceptability	7.53±0.38 ^a	7.60±0.71 ^a	7.40±0.45 ^a	7.53±0.41 ^a	6.57±0.41 ^b	6.17± 0.48 ^b

Different superscript letters in a row indicate significant difference ($P \leq 0.05$)

^{ns} = no significant difference ($P > 0.05$)

V. CONCLUSION

The results of the study indicated that it is possible to obtain gluten-free biscuits with similar quality to biscuits made with wheat flour, without any additives. Nonetheless, Riceberry, rice and corn flour had a significant influence on properties of biscuits. The health benefits of the gluten-free biscuits with Riceberry flour should be highlighted to consumers in order for this product to be accepted. In addition to the gluten free biscuits with Riceberry flour in market would increase the diversity of functional bakery products and, even more importantly, of functional foods suitable for celiac disease patients.

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REFERENCES

1. AACC. (1984). Approved methods of analysis. St. Paul, Minnesota: The American Association of Cereal Chemists
2. AOAC. (2000). Official methods of analysis (17th ed.). Maryland, USA: Association of Official Analytical Chemists.
3. Yodmanee, S., Karrila, T.T., & Pakdeechuan, P. (2011). Physical, chemical and antioxidant properties of pigmented rice grown in southern Thailand. *International Food Research Journal*. 18(3), 901- 906.
4. Singh, J., Singh, N., Sharma, T.R., & Saxena, S.K. (2003). Physicochemical, rheological and cookie making properties of corn and potato flours. *Food chemistry*, 83, 387-393.
5. Jnawali, J., Kumar, V. & Tanwar, B. (2016). Celiac disease: Overview and considerations for development of gluten-free foods. *Food Science and Human Wellness*, 5, 169-176.
6. Sakac, M., Pestoric, M., Mandic, A., Misan, A., Nedeljkovic, N., Jambrec, D., Jovanov, P., Lazic, V. & Pezo, L. (2016). Shelf-life prediction of gluten-free rice-buckwheat cookies. *Journal of Cereal Science*. 69. 336-343.
7. Raymundo, A., Fradinho, P., & Nunes, M. C. (2014). Effect of psyllium fibre content on The textural and rheological characteristics of biscuit and biscuit dough. *Bioactive Carbohydrates and Dietary Fibre*, 3. 96-105.
8. Chakraborty, S.K., Kumbhar, B.K., Chakraborty, S. & Yadav, P. (2011). Influence of

- processing parameters on textural characteristics and overall acceptability of millet enriched biscuits using response surface methodology. *Journal of Food Science & Technology*, 48 (2011), pp. 167–174
9. Sirichokworrakit, S. Phetkhut, J. & Khammoon, A. (2015). Effect of partial substitution of Wheat flour with Riceberry flour on quality of noodles. *Procedia-Social and behavioral Sciences*. 197, 1006-1012.
 10. Morita, E., Chinuki, Y., Takahashi, H., Nabika, T., Yamasaki, M. & Shiwaku, K. (2012). Prevalence of wheat allergy in Japanese adults. *Allergology International*, 61, 101-105.
 11. Frei, M., & Becker, K. (2004). Agro-biodiversity in subsistence-oriented farming systems in a Philippine upland region: nutritional considerations. *Biodiversity and Conservation*. 13, 1591–1610.



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