



PROGRAM & PROCEEDINGS

of the 2019 INTERNATIONAL CONFERENCE on QUALITY OF LIFE

Sept. 28nd to Sept. 29th, 2019

Kyoto, Japan

intconf@as4qol.org

<http://as4qol/icqol/2019>



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3. Thanks

The Organizing Committee would like to express its grateful thanks to Imex Japan Co. Ltd. for providing communications, facilities, and other logistical support. In addition, said committee is thankful to Kyoto Pharmaceutical University for kindly allowing the meeting to be convened in its premises for an economically viable fee.

TABLE OF CONTENTS

2019 CONFERENCE ORGANIZATION - i

PRESENTATIONS - 1

Saturday, September 28th

11:00-11:10 OPENING REMARKS BY PROF. MATSUDA

10:15-10:45 CONFERENCE ICEBREAKERS & WORKSHOP

KEYNOTE SPEECH - 1

11:00-12:00 THE ROLE OF GRAMMAR INSTRUCTION FOR JAPANESE LEARNERS OF ENGLISH AS A FOREIGN LANGUAGE

FUJIWARA, Yumi. 2

12:00-13:00 LUNCH

PRESENTERS - 3

13:00-13:30 H106 BIOFUNCTIONAL EFFECTS OF TRADITIONAL THAI MEDICINES– BIOFUNCTIONAL MOLECULES FROM THE FRUIT OF PIPER CHABA

MATSUDA, Hisashi. 4

13:30-14:00 P101 FURTHER VALIDATION OF PSYCHOMETRIC EVALUATION OF THE MODIFIED VERSION OF WHOQOL-BREF QUESTIONNAIRE USING RASCH ANALYSIS: A CROSS-SECTIONAL STUDY

UDDIN, Mohammed Nazim. 5

14:00-14:30 S102 INCOME, DEMOGRAPHY AND AIR QUALITY IN
TAIWAN

LIU, Jin-Long 6

14:30-15:15 Tea break

15:15-15:45 H105 RESEARCH ON THE ANTI-HYPERTENSIVE
EFFECTIVE CONSTITUENTS OF SANOSHASHINTO

WU, Jianbo 7

16:45-16:15 NO SUCH THING AS A MAGIC BULLET: A CASE STUDY
ON INTAKE OF COMBINED FUNCTIONAL FOODS IN A DIABETIC
PATIENT

FOONG, Anthony FW 8

16:15-16:45 IMPROVEMENT OF FORMULA ENHANCES EFFICACY:
INGREDIENTS, PURITIES AND SOURCES FOR FUNCTIONAL FOODS
ARE IMPORTANT EFFICACY DETERMINANTS

FOONG, Anthony FW 10

16:45-17:30 Break

17:30-19:30 RECEPTION PARTY - 12

Sunday, September 29th

KEYNOTE SPEECH - 12

10:00-11:00 PERSONAL EPISODES FOR PHARMACEUTICAL ENGLISH
LESSONS

KAMADA, Masao 12

PRESENTERS - 16

11:00-11:30 E101 COMPARISON AMONG FOUR COUNTRIES OF THE
OBJECTIVE STRUCTURED CLINICAL EXAMINATION

KOBAYASHI, Aya 17

11:30-12:00 H103 HEPATOPROTECTIVE TRITERPENE SAPONINS
FROM THE ROOTS OF BUPLEURUM FALCATUM

YIN, Xu 18

12:00-13:00 LUNCH

13:00-13:30 H104 PASSIONFLOWER EXTRACT AND ITS FLAVONOID
CONSTITUENTS ENHANCES CIRCADIAN CLOCK GENE PER2 IN
NIH3T3 CELLS

SHRESTHA, Sarita 19

13:30-14:00 H192 COUMARIN CONSTITUENTS FROM THE
FLOWERS OF MAMMEA SIAMENSIS WITH AROMATASE INHIBITORY
ACTIVITY

LUO, Fenglin 20

14:00-14:10 CLOSING REMARKS BY PROF. FOONG

KEYWORD INDEX - 21

PRESENTATIONS

Start	Duration	End	Item	Presenter	Chair
10:00	15	10:15	Opening remarks	MATSUDA	
10:15	45	11:00	Warm up	CRESPO	FOONG
11:00	60	12:00	Keynote 1	FUJIWARA	FOONG
12:00	60	13:00	Lunch		
13:00	30	13:30	Presentation 1	MATSUDA	FOONG
13:30	30	14:00	Presentation 2	UDDIN	FOONG
14:00	30	14:30	Presentation 3	LIU	FOONG
14:30	45	15:15	Tea		
15:15	30	15:45	Presentation 4	WU	MATSUDA
15:45	30	16:15	Presentation 5	FOONG	MATSUDA
16:15	30	16:45	Presentation 6	FOONG	MATSUDA
16:45	45	17:30	Break		
17:30	120	19:30	Reception		

Start	Duration	End	Item	Presenter	Chair
10:00	60	11:00	Keynote 2	KAMADA	MORIKAWA
11:00	30	11:30	Presentation 7	KOBAYASHI	MORIKAWA
11:30	30	12:00	Presentation 8	YIN	MORIKAWA
12:00	60	13:00	Lunch		
13:00	30	13:30	Presentation 9	SHRESTHA	KOBAYASHI
13:30	30	14:00	Presentation 10	LUO	KOBAYASHI
14:00	30	14:30	Closing remarks	FOONG	

KEYNOTE SPEAKER: Yumi Fujiwara

The Role of Grammar Instruction for Japanese Learners of English as a Foreign Language

This study aims to report on and investigate the role of English grammar instruction in the Japanese EFL context. With the rapid rise of globalization, English has continued to hold on to its dominant position as the most influential language for international communication. According to Kachru (1985), English language contexts can be divided into three categories: English as a native language (ENL), English as a second language (ESL), and English as a foreign language (EFL). Japan is one of the EFL countries, where English is learned as a foreign or additional language, and we have little or no exposure to English outside the classroom. In Japan therefore, the classroom environment is the critical area for the development of sufficient EFL proficiency. Over the past several decades, the Japanese educational system has been undergoing major changes to meet the demands for the various English skills required for adapting to a rapidly-changing, globalized world. However, significant results in teaching English have yet to be achieved since there is still a strong influence of the Grammar Translation Method in actual EFL classrooms. This method basically involves memorization of vast amounts of vocabulary, learning complex grammatical rules, and word-for-word back and forth translation between English and Japanese; as a result this method can result in an unbalanced concentration on certain English skills (i.e., reading skills and grammar for the most part) and on the avoidance of grammatical mistakes (i.e., it is accuracy-based). Kikuchi (2006) claims that this might be mainly the result of the examination-driven nature of the EFL education system in Japan. In response to extensive criticism of conventional memorization-focused teaching, Japan's Ministry of Education, Culture, Sports, Science, and Technology (MEXT) is proposing to implement radical reforms in the following areas starting the next year: earlier English education (i.e., the introduction of compulsory English lessons to fifth and sixth graders) and university entrance examinations (i.e., the establishment of a new standardized university admission exam system), in the hope that this move will help improve the quality of education based on communicative competence. In order to carry out communicative teaching in Japanese EFL classrooms, it is of great significance to clearly outline what 'communicative competence' means and then offer possible ways to achieve Communicative Language Teaching, which is often considered to be opposed to a classic Grammar Translation Method. Canale and Swain (1980) and Canale (1983) defined communicative competence in terms of four components; (a) grammatical competence; (b) sociolinguistic competence; (c) strategic competence; and (d) discourse competence. Here, what we should keep in mind is that 'grammar' is not opposed to communication in the framework of communicative competence since grammatical competence is one of the four significant factors of establishing better

communication. It is not grammar per se that is to be blamed, but the way it is dealt with in classes; therefore, it is imperative for EFL teachers and instructors to deal with grammar instruction as a consciousness-raising activity aimed at piquing learners' interest, attention, and motivation.

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Presentation H106**Biofunctional effects of traditional Thai medicines – Biofunctional molecules from the fruit of *Piper chaba***

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Piper chaba (syn. *P. retrofractum*, Piperaceae) is widely distributed in Southeast Asia. The fruit of this plant is commonly called “*Dee Plee*” in Thailand and has been used as an antifatulent, expectorant, antitussive, antifungal, uterus-contracting agent, sedative-hypnotic, appetizer, and counterirritant. In the course of our characterization studies on this natural medicine, we isolated 47 constituents from the 80% aqueous acetone extract of the fruit of *P. chaba*. The aqueous acetone extract and the isolates including piperine were found to show protective effects against ethanol- or indomethacin-induced gastric lesions in rats, inhibitory effects on the increase in serum AST and ALT levels induced by D-galactosamine (D-GalN)/LPS in mice and against cell death induced by D-GalN/TNF- α in primary cultured mouse hepatocytes. Furthermore, several amide constituents [piperlonguminine and retrofractamides A and B] except for piperine promoted adipogenesis of 3T3-L1 cells like a PPAR γ agonist, troglitazone. Among them, retrofractamide A was the most active and significantly increased the amount of adiponectin released into the medium and the uptake of ³H-2-deoxyglucose into the cells. Retrofractamide A also increased mRNA levels of adiponectin, PPAR γ 2, and GLUT4, but did not act as a PPAR γ agonist at the receptor levels different from troglitazone. We recently synthesized the related compounds to clarify the structural requirements for the activity, and this type of compounds was found to protect TNF- α -induced insulin resistance in the cells.

Keywords: *Piper chaba*, Dee Plee, Traditional Thai medicines, Biofunctional molecules, retrofractamide A, insulin resistance

Presentation P101**Further validation of psychometric evaluation of the modified version of WHOQOL-BREF questionnaire using Rasch analysis: A cross-sectional study**

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Background: This investigation aims to validate the psychometric properties of the modified 19-items World Health Organization Quality of Life (WHOQOL-BREF) Instrument in a different population for prospective use in clinical settings in rural Bangladesh.

Method: This cross-sectional investigation collected a sample of 300 adults aged 18-85 years from a rural district called Narail in Bangladesh using a multi-stage cluster random sampling technique during July-August 2018 using a mobile data collection tool (CommCare).

Results: Results showed good overall fit, as indicated by a significant item-trait interaction for physical ($\chi^2_{(20)} = 32.13$, $p = 0.041$), psychological ($\chi^2_{(16)} = 14.93$, $p = 0.529$), social ($\chi^2_{(16)} = 12.62$, $p = 0.397$), and environmental ($\chi^2_{(20)} = 22.01$, $p = 0.339$) domains respectively. Item fit residual (IFR) values and person fit residual (PFR) values for all domains were within desired limits. Reliability was very good as indicated by a person separation index (PSI) = 0.873 and Cronbach's Alpha (CA) = 0.881 for physical domain, (PSI = 0.739, CA = 0.746) for psychological domain, (PSI = 0.650, CA = 0.669) for social domain, and (PSI = 0.753, CA = 0.781) for environmental domain. A modified WHOQOL-BREF version showed good reliability, adequate internal consistency, uni-dimensionality as well as being free from local dependency. The scale also showed similar functioning for adults and older adults, males and females, no education and at least primary level of education, low and high socio-economic conditions.

Conclusion: Further validation of the modified WHOQOL-BREF in different populations confirmed that the modified version could be used as a routine measure in Health Related Quality of Life (HR-QOL) services as it provides an efficient screening tool for measuring QOL among the rural Bangladeshi population. Future research should continually use the modified WHOQOL-BREF in different clinical settings within representative rural areas of Bangladesh to measure the HR-QOL assessments for people suffering from chronic or other diseases.

Keywords: WHOQOL-BREF, Quality of Life, Rasch Analysis, Further Validation, Rural Bangladesh, Health Related Quality of Life

Presentation S102

Income, Demography and Air Quality in Taiwan

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Reducing ambient air pollution to increase air quality has been selected by the World Health Organization as one of the most important environmental issues affecting mortality and health. The relationship between the environmental quality and income growth has long been a research subject, especially since the work of Grossman and Krueger (1995). However, the issue of environmental justice has come to the forefront, the researchers been led to put increased attention on pollution inequality and environmental inequality.

In this study, we investigate the relationships between the air quality and income as well as demography. By collecting data from a total of 76 townships during the years 2012 to 2017 in Taiwan, we construct a panel dataset that includes information including the air quality, denoted as the average level of small particulate matter of 2.5 microns or less in diameter (PM_{2.5}), average household income, and demographic variables.

Based on the panel data estimation methods, including the consideration of fixed effects and random effects on the regression error term, our estimates show that the air quality has a negative relationship with the income and a positive relationship with the squared term of income. However, air quality has a positive relationship with the ratio of younger generation and has the negative relationship with the ratio of older generation. Our results indicate that income-typed as well as demography-typed environmental inequality may exist. Furthermore, our estimates show that the fixed effects model is more appropriate than other estimation methods, from which we infer that heterogeneity bias should be considered.

Keywords: Air quality, PM_{2.5}, fixed effects, random effects

Presentation H105**Research on the Anti-Hypertensive Effective Constituents of Sanoshashinto**

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Recently, some researchers have reported that Sanoshashinto could relax the vascular contraction in in vitro experiments and lower the blood pressure of patients in vivo. Based on this discovery, in our study, Sanoshashinto was decomposed into different groups and extracted. All extracts were tested in in vitro anti-vascular contraction experiments which looked for high concentrations of potassium chloride (High K⁺) and noradrenaline (NA) induced contractions in isolated rat aortic rings and strips. Meanwhile the extracts were qualitatively and quantitatively analyzed under High Performance Liquid Chromatography (HPLC). The results showed that the Sanoshashinto extracts had higher contents of baicalin and berberine than the other components. All pharmacological and HPLC data were analyzed using principal component analysis (PCA) software, and the PCA results showed that baicalin, berberine, palmatine, baicalein made high contributions to the pharmacological activity. Besides these, spontaneously hypertensive rats (SHRs) underwent oral administration with a mixture of baicalin and berberine. The results showed that a mixture of baicalin and berberine could significantly reduce the increasing speed of systolic blood pressure (SBP) compared to the control group. These findings suggest that Sanoshashinto has a good anti-hypertensive effect in vitro and in vivo, and that baicalin and berberine are the main anti-hypertensive effective components in Sanoshashinto; furthermore they might produce the effect by stimulating the NO-cGMP pathway. In addition, results suggested that the BKCa channel and DAD/PKC/CPI-17 pathway may also be involved.

Keywords: Sanoshashinto, Anti-hypertension, NO-cGMP pathway, BKCa channel, PKC

Presentation H106

No Such Thing as a Magic Bullet: A Case Study on Intake of Combined Functional Foods in a Diabetic Patient

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Background: A diabetic patient (male; age: 67), prescribed with an antidiabetic (Metogluco™ 250) for hyperglycemia, was on functional food A (3eplusα; 3 capsules/day) for more than 10 yr. Because of functional food A intake, he has maintained a healthy blood pressure of 125-128/72-78 mmHg without the use of any antihypertensive medication (vs pre-intake data). However, apart from poor glycosylated hemoglobin (HbA1c: 8.0 - 8.1%) due to hyperglycemia, his metabolic data indicated high levels of total-cholesterol (T-CHO), low-density lipoprotein-cholesterol (LDL-C), triglycerides (TG) with no abnormal readings for other metabolic indexes on December 21, 2018 (Table 1). In addition, he experienced poor grip-strength (best count on suspension limit: 9-10 counts of ca. 10-degree oscillations while hanging on a monkey-bar for each session), joint discomfort/pain while climbing staircases of up to 10 steps, poor coordination when standing on one leg soaping his sole in showers (suffered falls within 5 sec), and poor urination flow (trickling and usually required more than 1.0-1.5 min).

Methods: While physical deficiencies were monitored on daily basis for staircase-climbing, standing coordination during showers, and urination flow, grip-strength on a monkey-bar was monitored on a weekly basis. Monitoring of the metabolic data was performed at 3-month intervals. Patient was asked to continue taking functional food A as regimened with the same previous daily intake. To resolve physical and metabolic problems encountered, another function food B (POWERplus2) was added to the daily regimen of functional food A according to its functional properties: taking 5 tablets before each meal (3 times a day).

Results: Daily monitoring indexes such as ease in staircase-climbing (no discomfort/pain after climbing 10 steps, longer (> 5 sec) and improved coordination (no falling) in standing on one leg during showers, and urination flow/time improved to within 1 min after 3-wk intake, and continued to improve further in an intake interval-dependent manner. As for the weekly oscillations hanging (grip-strength) on monkey bar, the counts increased from 15-16, 19-20 and 28-30 oscillations after 3-wk, 3-month and 6-month intake, respectively. In similar patterns, T-CHO, LDL-C and TG decreased with intake intervals, scoring their levels to within normal ranges for T-

CHO and LDL-C after 3-month intake, while TG was eventually normalized to its normal range after 6-month intake (Table 1). The HbA1c readings were not affected.

Table 1: Clinical Examination Report			3eplus α intake alone	+ POWERplus intake	
Items	Units (IS*)	Standard Range (IS*)	Dec 21, 2018	Mar 22, 2019	Jun 21, 2019
CPK	IU/L	60-150	118	96	99
HbA1c	HbA1c	7.0-8.0*	8.0	8.1	8.0
	mg/dL	120-220			
T-Cho	(mmol/L)	(3.08-5.64)	H 225 (5.77)	201 (5.15)	179 (4.59)
	mg/dL	50-150			
TG	(mmol/L)	(0.56-1.69)	H 251 (2.82)	H 306 (3.44)	129 (1.45)
	mg/dL	35-60			
HDL-C	(mmol/L)	(0.90-1.54)	42 (1.08)	38 (0.97)	39 (1.00)
	mg/dL	65-139			
LDL-C	(mmol/L)	(1.67-3.56)	H 152 (3.90)	131 (3.36)	117 (3.00)

*IS: international standard unit

**Standard range for diabetics: 7.0-8.0; for normal healthy humans: 4.0-5.6)

H: higher than normal range values.

Discussion: Based on the data, a single functional food (A) could not solve all the problems encountered by the present diabetic. A combination of functional foods A and B served as a more useful option to solving potentially health-threatening problems.

Keywords: Functional foods, combined use, increased efficacy, metabolic data

Presentation H107**Improvement of Formula Enhances Efficacy: Ingredients, Purities and Sources for Functional Foods are Important Efficacy Determinants**

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Background: A diabetic patient (male; age: 67), prescribed with an antidiabetic (Metogluco™ 250) for hyperglycemia, was on functional foods A (FF-A: 3eplusα at 3 capsules/day; 1 capsule before each meal) and B (FF-B: POWERplus at 5 tablets/intake before each meal; 3 intakes/day) had his physical problems and metabolic data improved significantly after 3-month (total cholesterol or T-Chol and low-density lipoprotein-cholesterol or LDL-C) and totally (inclusively triglycerides or TG) after 6-month intake. However, his poor glycated hemoglobin (HbA1c) remained unchanged. As ingredients and contents of FF-A have been consistently formulated from the same sources for more than 10 yr, attention was shifted to FF-B. Additional ingredients, ingredient purity, and ingredient procurement sources were altered and tested in this study, where only the metabolic data were monitored. Special attention was focused on glycosylated hemoglobin (HbA1c: 8.0-8.1%) levels, which are considered poorly managed for type-2 diabetics, although T-CHO, LDL-C, and TG levels have completely recovered to normal-range readings after 6-month intake of combined FF-A and FF-B (Table 1). In this follow-up study, a revised formula for FF-B which we called FF-C (POWERplus2) was attempted.

Methods: The revised formula for FF-C (POWERplus2) included mulberry leaf extract (from a new source) and morinaga leaf extract was added to the previous formula, and patient continued the follow-up study by replacing FF-B with FF-C from July 2, 2019 (Table 1), and dosages and regimen remained unchanged. In brief, 3 capsules of FF-A daily at 1 capsule before each meal were orally taken; 5 tablets of FF-C before each meal were taken 3 times daily (occasionally 3-4 tablets were taken before bedtime).

Results and Discussion: On September 20, 2019 (2 months 18 days after initial intake), HbA1c level of the diabetic patient registered 7.6%; the blood glucose levels – although not a reliable parameter – synchronized with the HbA1c values. Although T-Chol, TG and HDL-C levels were still within the normal range values, LDL-C level surpassed the normal upper range limit. On closer interview with patient, it was found that he devoured rather high amounts of mooncakes (5-6 mooncakes/week) during a 30-day interval before the present blood analysis (from August 15-Sept 16,

2019). It is significant that poor Hb1Ac values, which have been categorized as ‘poor’ in type-2 diabetes management for the past 12 months, have finally improved to ‘good’ in type-2 diabetes management.

Table 1: Clinical findings			3eplusα intake alone + POWERplus intake			POWERplus2 intake
<i>Items</i>	<i>Units (IS*)</i>	<i>Std Range (IS*)</i>	<i>21-Dec-18</i>	<i>22-Mar-19</i>	<i>21-Jun-19</i>	<i>20-Sep-19</i>
CPK	IU/L	60-150	118	96	99	114
HbA1c	%	7.0-8.0*	8.0	8.1	8.0	7.6
T-Cho	mg/dL (mmol/L)	120-220 (3.08-5.64)	H 225 (5.77)	201 (5.15)	179 (4.59)	205 (5.26)
TG	mg/dL (mmol/L)	50-150 (0.56-1.69)	H 251 (2.82)	H 306 (3.44)	129 (1.45)	98 (1.10)
HDL-C	mg/dL (mmol/L)	35-60 (0.90-1.54)	42 (1.08)	38 (0.97)	39 (1.00)	39 (1.00)
LDL-C	mg/dL (mmol/L)	65-139 (1.67-3.56)	H 152 (3.90)	131 (3.36)	117 (3.00)	H 147 (3.77)

*IS: international standard unit

**Standard range for diabetics: 7.0-8.0; for normal healthy humans: 4.0-5.6)

H: higher than normal range values.

Keywords: Functional foods, ingredients, additional ingredients, supply sources, novel efficacy

KEYNOTE SPEAKER: Masao Kamada

Personal Episodes for Pharmaceutical English Lessons

1. Introduction

Scientific English is important for the study of scientific knowledge and also for understanding the meaning of words and concepts born out of modern science. However, many students might think that basic scientific English is not interesting, despite being important and useful. It is hard for students to concentrate on a 90-minute lesson using a textbook only. Most lecturers are aptly worried about choosing textbooks and materials, creating lesson plans, developing attractive teaching methods, and so on. I have taught basic Pharmaceutical English at Kyoto Pharmaceutical University for five years. From my experience, episodes are sometimes effective in attracting students and make them more active in their learning.

In this keynote presentation, I will introduce episodes from my experience giving lessons on Pharmaceutical English concerning radioisotopes and chemical compounds. Specifically, I will relate some personal episodes which are not likely to be found in any textbook.

2. Radiation effects and a second-generation Japanese-American scientist

A number of new concepts and units had been born out of developments in the field of radiation, but whose experimental data were insufficient to make the data applicable for humans. These developments were made during the 1950s after World War II.¹ This timing is reflective of the fact that the radiation science and its medical applications were developed and established in the close relation to the atomic bombardments on Hiroshima and Nagasaki in 1945.² The atomic bombings killed 90,000–146,000 people in Hiroshima and 39,000–80,000 people in Nagasaki, and more than 460,000 survivors suffered after-effects from the bombings. It was supposed that the huge amount of data collected from Japanese victims and survivors would be useful in establishing quantitatively the effects of radiation on humans.

In another setting,³ I have told the story of a second-generation Japanese-American scientist other than the famous scientists Einstein and Oppenheimer. During World War II, almost all Japanese-Americans were sent to concentration (internment) camps and their property was confiscated. Many suffered severe discrimination even after the war was over.⁴ In spite of the severe anti-Japanese sentiment, Dr. Arakawa was able to study hard and become a very important radiation scientist at Oak Ridge National Laboratory (ORNL). As one of members of the Atomic Bomb Casualty Commission in Japan (ABCC), he investigated the radiation effects of the A-bomb in Hiroshima



Fig. 1. Friendship Bell located in Oak Ridge.⁷



Fig. 2. The Bell cast in Kyoto⁷

and Nagasaki.^{5,6} Hiroshima was the birthplace of his father, but it was almost completely destroyed. He would have been hard pressed to come up with words for such a cruel reality. Dr. Arakawa was my supervisor at ORNL, but he never told this story during his lifetime.

3. Friendship Bell

The town of Oak Ridge⁷ was established in 1942 on isolated farm land in Tennessee as part of the Manhattan Project.⁸ The Manhattan Project was a research and development undertaking during World War II that produced the first nuclear weapons. At Oak Ridge, many young girls⁹ worked to concentrate uranium isotopes for making atomic bombs. Natural uranium contains 0.711% uranium-235, 99.284% uranium-238, and a trace (0.0055%) amounts of uranium-234 by weight. During the Manhattan Project enriched uranium (uranium-235) was given the codename oralloy, a shortened version of Oak Ridge alloy, after the location of the plants where the uranium was enriched. The X-10 Graphite Reactor in Oak Ridge was also used to show that plutonium can be created from enriched uranium. A uranium gun-type bomb ("Little Boy") was dropped on Hiroshima, and a plutonium implosion bomb ("Fat Man") on Nagasaki. After the end of World War II the demand for weapons-grade plutonium fell, and the reactor and the laboratory's employees were no longer involved in nuclear weapons. The present scientific programs of ORNL¹⁰ focus on materials, neutron science, energy, high-performance computing, systems biology, and national security.

When I was an invited scientist at ORNL, I met Dr. Ram Uppuluri and his wife, Shigeko,⁷ who originally hatched the idea of constructing a bell for Oak Ridge. They proposed the "Peace Bell Project" for the 50th anniversary of Oak Ridge city in 1992, since the theme of the anniversary was "Born of War, Living for Peace, Growing Through Science." Shigeko expressed her motivation to establish the Peace Bell: "I

don't want to think about Oak Ridge as just creating a nuclear bomb. This is for the peace.”

The relief panels featured on the Bell's outer walls were designed by Oak Ridge resident Suzanna Harris to represent emblematic images of Tennessee and Japan. An additional panel was inspired by the tragedies of war, and simply listed the dates of Pearl Harbor, V-J Day, and when the US dropped the atomic bombs on Japan.⁷ The Uppuluri sought a bell maker to cast the Bell. Since the birthplace of my wife was in the neighborhood of a renowned Japanese bell maker in Kyoto, my wife introduced Mr. Sotetsu Iwasawa to Shigeko. A bronze bell, nearly seven feet tall and five feet wide, was cast in Kyoto and was installed at Oak Ridge as an inspiration for future peaceful relations between Japan and the USA. In 2018, Oak Ridge marked its 75th birthday by giving the Friendship Bell a place of honor in the new Peace Pavilion.

4. Sarin and Saline

Sarin¹¹ is an extremely toxic synthetic organophosphorus compound with formula $C_4H_{10}FO_2P$. It is produced as a chemical weapon, while saline is a very useful water solution containing sodium chloride (ca. 0.9%) often used in hospitals. These extremely different substances are, however, in the Japanese language, dangerously similar, for reasons I will explain.

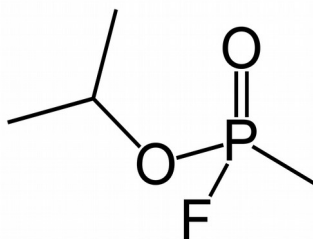


Fig. 3. Molecular structure of $C_4H_{10}FO_2P$.¹¹

Katakana is often used when foreign words are changed according to the Japanese sound system into Japanese writing and these katakana words are converted into words using foreign alphabets. Romanizations of katakana into the latin alphabet are a standard form used for these conversions into western languages. However, it should be noted that there are letters such as L, Q, V, and X, which are missing in Romanization charts, since they are not considered to correspond to unique Japanese sounds. Therefore, saline is written as サリン in katakana style and usually, but incorrectly, rendered as “sarin” when romanized--S, A, R, I, N, with an “R” and without an “E”--when converted to romanized style. This is because the last letter “E” of saline is a silent letter and the letter “R” represents the so-called missing sound of the “L”. This means that the perfectly safe compound saline, in English, turns into the terrible poison sarin in Japanese. Fig. 3. Molecular structure of $C_4H_{10}FO_2P$.¹¹

To avoid this kind of mistake, one might insist on precise pronunciation when saline is converted from English to katakana or romanized style. English pronunciation of saline is shown as [seilain] or [seili:n] in dictionaries, while that of sarin is [sarin]. Thus saline ought be written as セイライン or セイリーン in katakana style and



Fig. 4. The police officers wearing gas masks for inspection of sarin attacks.¹³

seirain or seirīn in romanized style. Precise English pronunciation will prevent mistaking sarin for saline, but the romanization of セイライン or セイリーン results in spellings different from the correct one for saline. Since there are many chemical compounds with similar but not identical names, it is strongly recommended that one read and write names of compounds correctly using English itself, and not using romanization from katakana. To highlight this fact, I will present a potential scenario based on a true personal experience related to the Matsumoto Sarin Incident¹² in 1994.

After the Matsumoto attack, an acquaintance of ours, Mr. Kōno, was mistakenly identified as the criminal in the incident. The sarin attack killed eight people and sickened many more and in fact his wife was one of these. His wife was a high-school friend of my wife's, and my wife sent her a letter of encouragement just after we heard about the attack. The police then contacted my wife by phone and asked about her relationship with Mr. Kōno and about my occupation. At that time, I was carrying out molecular science research at the Institute for Molecular Science (IMS) of the Okazaki National Research Institutes (ONRI) where there were many organic synthesis specialists. Nobody at IMS synthesized sarin, but saline was commonly used in the National Institute for Basic Biology (NIBB) which was located on the campus of ONRI. Also I had dangerous potassium cyanide and arsenic compounds there for my research. As it turned out, my wife did not know the details of my research and when asked for my occupation she answered to the police: "My husband studies physics at the Institute for Molecular Science". Luckily, their suspicions were not aroused, and nothing happened to me. After the subsequent Tokyo subway sarin attack¹³ in 1995, Mr. Kōno was safely released. Later we realized that I might easily have become mixed up in the incident if I had been using saline for my research and had let my wife know about it using romanized style.

5. Acknowledgements

I would like to express my sincere thanks to late Dr. E. T. Arakawa and the Uppuluri, who gently supported me during my working in Oak Ridge National Laboratory. The author also thanks to Drs. Anthony FW Foong and David Crespo for their kind editing of my manuscript.

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Presentation E101**Comparison among Four Countries of the Objective Structured Clinical Examination**

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Background: In 2010, Japanese Pharmacy education shifted to a six-year program and introduced the Objective Structured Clinical Examination (OSCE). All fourth year pharmacy students have to pass the Pharmaceutical Common Achievement Tests which consists of the Computer-Based Testing (CBT) and the OSCE. OSCE is an objective test for clinical skill performance and competence such as communication and dispensing and so on. Despite the fact that many pharmacy schools, around the world, conduct OSCE, there is no data comparison about the OSCE system.

The aim of this study was to try to objectively define the characteristics of the Japanese OSCE system by comparing the OSCE among pharmacy schools in Canada, the UK, Malaysia and Japan.

Method: We investigated the characteristics of the OSCE system and implementation methods among these four countries by using online research tools (Google scholar, Education Resources Information Center, PubMed, the America education research Journals etc.)

Results: Each of the four countries have the same summative and formative evaluation methods of OSCE. In the UK and Malaysia OSCE is not compulsory in all pharmacy schools. In Japan and Canada, OSCE is compulsory but the timing of the test varies. The purpose of OSCE and the performance test duration is also different in each of the countries.

Discussion: We were able to make a data comparison of OSCE among these four countries by doing so we were able to clearly define Japanese characteristics of OSCE in Japan. In the future I would like to introduce the advanced OSCE system in Japanese pharmacy curriculum.

Keywords: OSCE, comparison, Japan, Canada, the UK, Malaysia, Pharmacy education

Presentation H103**Hepatoprotective triterpene saponins from the roots of *Bupleurum falcatum***

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Bupleurum falcatum L. is cultivated in Asia. The root of *B. falcatum* has been used for its anti-inflammatory, anti-pyretic, and anti-hepatotoxic effects in the treatments of common cold, fever, and hepatitis.

We have found that MeOH extract of the roots of *B. falcatum* showed inhibitory activity in D-galactisamine (D-GalN)-induced cell damage in hepatocytes. Through bioassay-guided separation, several triterpene saponins were identified as the bioactive constituents. Furthermore, hepatoprotective effects of major active saponins against D-GalN/lipopolysaccharide (LPS)-induced liver injury in mice were also examined. From the MeOH extract of the roots of *B. falcatum* cultivated in Sichuan province, China, 2 new and 21 known saponins were isolated. Hepatocytes were isolated from Wistar rat by a collagenase perfusion method. The cell suspension at 4×10^4 cells in 100 μ l William's E medium (containing 10% FBS) was inoculated in a 96-well microplate and pre-incubated for 4 h at 37°C under 5% CO₂ atmosphere. After pre-incubation, 100 μ l of fresh medium containing D-GalN (1 mM) with the test sample was added to the medium. After 44h incubation, cell viability was assessed by MTT colorimetric assay.

The structure of these two new saponins was determined on the basis of spectroscopic properties and chemical evidence. Among the isolates, saikosaponins b₃ and b₄, and bupleuroside IX significantly inhibited cell damage in hepatocytes. In addition, major saikosaponins, such as saikosaponins a, c, and d, were found to significantly inhibit the liver injury. The data demonstrated that saponin constituents from *B. falcatum* roots could protect against D-GalN and D-GalN/LPS-induced liver injury.

Keywords: saponins, Hepatoprotective, *Bupleurum falcatum*, D-GalN, liver injury

Presentation H104**Passionflower extract and its flavonoid constituents enhances circadian clock gene *Per2* in NIH3T3 cells**

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Passionflower (*Passiflora incarnata* L.) is cultivated in North America, Southeast Asia, and Australia, and has been traditionally used as herbal medicine and in herbal teas. Processed foods containing passionflower extract have recently been used worldwide to improve anxiety and sleep disorders. Herbal teas and the extract have been reported to improve anxiety and anxiety-related disorders such as sleep disorders. Circadian rhythms play key roles in the regulation of physiological and behavioral systems including wake-sleep cycles. To evaluate regulation of circadian rhythm on passionflower, effects of the extract and its constituents on the mRNA expression of one of the circadian clock genes *Per2* in NIH3T3 cells were examined.

NIH3T3 cells were subcultured in D-MEM supplemented with a 10% fetal bovine serum (FBS) at 37 °C under a 5% CO₂ atmosphere. Serum shock was induced as follows: the cells (1 × 10⁴ cells/mL) were seeded on various plate sizes. After 24 h, the medium was exchanged to serum-rich medium (D-MEM supplemented with 50% FBS), and then 2 h after, the medium was replaced with serum-free D-MEM with or without test samples for 20 h. After these treatments, the circadian expression of *Per 2* was evaluated in cells using quantitative real-time PCR.

From the methanol extract of *P. incarnata* flower, 10 flavanoids and L-tryptophan were isolated using normal-phase and reversed-phase column chromatography, and repeated HPLC. Among the isolates, several flavonoids such as isovitexin 2"-*O*- β -D-glucopyranoside, isoschaftoside, and homoorientin were found to enhance *Per2* mRNA expression at the concentrations of 10–30 μ g/mL.

Keywords: Passionflower extract, flavonoid constituents, circadian clock gene *Per2* in NIH3T3 cells

Presentation H102**Coumarin Constituents from the Flowers of *Mammea siamensis* with Aromatase Inhibitory Activity**

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Mammea siamensis (Miq.) T. Anders. (Calophyllaceae) is a small evergreen tree found in Thailand and Laos where it is called "salapee". The flowers of *M. siamensis* have been used as a heart tonic in Thai traditional medicine. According to previous chemical studies, several coumarins, xanthones, triterpenoids, and steroids have been isolated from the flowers, seeds, twigs, and bark of *M. siamensis*. In the course of our characterization studies on bioactive constituents in Thai natural medicines, the methanol extract of the flowers of *M. siamensis* was found to show inhibitory activity against human aromatase.

Aromatase, an enzyme of cytochrome P450 superfamily, is the rate-limiting enzyme in the conversion of testosterone and androstenediol to the estrogens, estrone, and estradiol. Aromatase is expressed in several tissues, where estrogens exert physiological roles. The source of estrogen production in breast cancer tissues is intratumoral aromatase. Thus, aromatase is a key therapeutic target in the treatment and prevention of estrogen-dependent breast cancer.

We reported that two new geranylated pyranocoumarins, mammeasins C and D, isolated from *M. siamensis*, showed strong inhibitory activity against aromatase. In our present study, it was revealed that mammea A/AA cyclo F and kayeassamin I also showed inhibitory activity against aromatase. Furthermore, for the purpose of confirming the specificity of aromatase inhibitory activity of these compounds, the inhibitory activity against 5 α -reductase, which is an enzyme using the same substrate testosterone as aromatase, was also examined.

Keywords: Coumarin Constituents, salapee, aromatase

KEYWORD INDEX

A

Air quality 6
 Anti-hypertension 7
 Anti-Hypertensive Effective Con-
 stituents 7
 Aromatase 20

B

Bangladesh 5
 Biofunctional molecules 4
 BKCa channel 7
 Bupleurum falcatum 18

C

CHAIPECH, Saowanee 20
 CHAN, Robert i
 Circadian clock 18, 19
 Circadian clock gene 19
 Combined use 9
 Coumarin Constituents 20
 Coumarin 20
 CRESPO, David i

D

D-GalN 4, 18
 Dee Plee 4
 Demography 6
 Diabetic 8, 9

F

Flavonoids 19
 flavonoid constituents 19
 FOONG, Anthony FW i, iv, 8, 10
 FUJIWARA, Yumi 2

Functional food 8-11
 Further Validation 5

G

Grip-strength 8

H

Health Related Quality of Life 5
 Hepatoprotective 18

I

IKUNO, Itsuno 7
 IMAI, Chizu i
 Income 6
 Increased efficacy 9
 Ingredients 11
 Additional ingredients 11

K

KATO, Rina 17
 KITADE, Tatsuya 7, 19
 KOBAYASHI, Aya 17
 KONNO, Takuya 18
 Kyoto Pharmaceutical University 4, 12,
 18

L

LIU, Jin-Long 6
 Liver injury 18
 LUO, Fenglin 20

M

Malaysia 17
 Mammea Siamensis 20
 salapee 20

MATSUDA, Hisashi . . . i, 4-7, 17-20
 Metabolic data 9
 MORIKAWA, Toshio . . . 4, 7, 18, 20
 MURAOKA, Osamu 20

N

NAKAMURA, Seikou 4, 7
 NAKASHIMA, Souichi 4, 7
 NIH3T3 cells 19
 NINOMIYA, Kiyofumi . . . 4, 18, 20
 NO-cGMP pathway 7
 Novel efficacy 11

O

Objective Structured Clinical Examination 17
 OSCE 17
 OHYA, Susumu i

P

Passionflower 19
 Per2 19
 Pharmacy 17
 Pharmacy education 17
 Piper chaba 4
Dee Plee 4
Piperaceae 4
 PKC 7
 PONGPIRIYADACHA, Yutana . . . 20
 Psychometric properties 5

Q

Quality of Life 5
 Health Related Quality of Life . . . 5
 QOL 5

R

Rajamangala University of Technology 20

Rasch Analysis 5

S

SADIADARMA, Monty P. i
 SAGUCHI, Ken-ichi 17
 Sanoshashinto 7
 Saponins 18
 SATO, Noriko i
 SHIBATANI, Kanae 20
 SHIHOU, Marina 7
 Showa University 17
 SHRESTHA, Sarita 19
 SOGA, Tomoko i
 supply sources 11

T

Taiwan i, 6
 TAKEGAMI, Shegehiko 7
 TANAKA, Sachiko 17
 Thai medicine 4
Thailand 4, 20
 traditional Thai medicine 4
 Triterpene 18
 TSAI, Jung Fa i

U

UDDIN, Mohammed Nazim 5

W

WU, Jianbo 7

Y

YAMASAKI, Mutsumi 7
 YIN, Xu 18
 YOSHIKAWA, Masayuki 4, 18

Z

ZILKHA, Gury i

