

# KASEA Quarterly

## Medical Science



2023 March

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재호주한인과학협회  
Korean Academy of Scientists and Engineers in Australasia

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**KASEA**  
**Quarterly**

**KASEA**  
**Quarterly Vol.2 Issue 1**

## Medical Science

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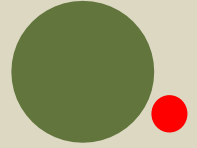
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카세아 회원 여러분 안녕하십니까?

우리 KASEA Quarterly 가 1주년을 맞이하였습니다. 지난 1년간 Quarterly 에서는 우리 과협의 우수한 과학 기술인의 연구 내용을 회원 누구나 알기 쉽게 정리하여 회원간의 지적 교류를 도모하고 나아가 잘 알려지지 않은 회원들의 연구업적을 알리는 과협 소통지로 자리 매김하였다고 자부합니다.

올해는 AKC2023시드니 학회와 한국과총의 제1회 세계한인과학기술대회가 열리는 중요한 해 입니다. 과총은 올해를 한국과학기술의 원년으로 삼아 세계과협과 더불어 미래과학기술을 선도 하고자 노력 중 입니다. 저희 호주-뉴질랜드과협에 대한 명성과 위상이 날로 높아져 가는 것을 느끼고 있습니다.

올해는 AKC2023 학회와 세계한인과학기술대회에 발표된 많은 다양한 연구주제를 바탕으로 염순자 편집위원장과 같이 특집호를 계획하고 있으니 많은 성원 부탁드립니다.

### KASEA 회장 인사말

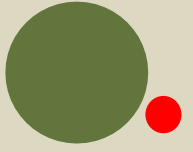
올해로 KASEA회장 임기를 마치는 저는 남은 임기동안 최선을 다하여 성공적인 AKC2023 개최와 우리과협의 중장기 발전계획 목표를 달성하기 위해 최선을 다하겠습니다.

회원 여러분의 관심과 참여가 큰 힘이 되고 있습니다. 해외에 있는 우리의 조그만 목소리가 한국과 호주, 뉴질랜드의 미래과학기술 정책에 반영될 수 있는 큰 울림이 될 수 있기를 기대합니다.

한정훈 드림

KASEA 회장 | 호주국립도시주택연구원 원장 | 정교수 UNSW





계간지가 창간 한지 벌써 1년이 지났습니다. 연구자들에게 중요한 정보와 새로운 발견을 공유하는 데 기여하게 되어서 기쁘게 생각합니다. 이러한 노력과 기여에 감사드리며, 앞으로도 계간지가 더 많은 분들에게 도움이 되는 콘텐츠를 제공할 수 있기를 기대합니다.

올해는 더 많은 과학 연구 분야에서 좋은 소식이 있기를 바라며, 계간지의 영향력이 커져 연구 결과가 보다 널리 알려지기를 바랍니다. 또한, 다양한 분야에서의 협력과 지식 공유를 통해 학문의 진보와 발전에 기여할 수 있기를 바랍니다.

많은 분들이 계간지를 통해 새로운 아이디어와 연구 방법을 찾고, 서로의 연구 결과를 공유하며 협력할 수 있기를 바랍니다. 이를 위해서는 계속해서 발전하고 개선되는 계간지가 되었으면 합니다, 지속적인 노력과 열정으로 계간지를 발전시키며, 연구자들의 필요에 부응하는 콘텐츠를 제공하고자 합니다.

편집장 인사말

앞으로도 많은 연구 결과와 좋은 소식을 전해주시기를 기대합니다.

염순자 드림 | KASEA Quarterly 편집장 | University of Tasmania



# Modified Rice Bran Arabinoxylan: Therapeutic Applications in Cancer and Other Diseases

## Associate Professor Sokcheon Pak

Charles Sturt University's School of Dentistry and Medical Sciences

He is a physiologist and an associate professor at Charles Sturt University's School of Dentistry and Medical Sciences. He currently leads and guides research into nutraceuticals to provide relevant and impactful clinical applications.

Associate Professor Sokcheon Pak as the lead editor has recently published his edited book titled 'Modified Rice Bran Arabinoxylan: Therapeutic Applications in Cancer and Other Diseases' by Springer.

For this first edition, he and three other editors have searched globally for expert contributors with a diverse range of backgrounds and knowledge. Some are research academics, others are university scholars teaching in postgraduate programs, and others are clinicians with significant clinical experience. All the authors are at the forefront of rice bran arabinoxylan compound (RBAC) research. Each contributor is enthusiastic about RBAC, and their dedication, tenacity and passion have been integral in the synthesis of research evidence for the therapeutic applications of RBAC.

This book consists of 12 chapters. Chapter 1 introduces RBAC to the reader by detailing its relationship to dietary fibres, chemical

composition, and production. Chapter 2 describes the superiority of RBAC as a biological response modifier that enhances natural killer (NK) cell activity, followed by evidence showing how RBAC can improve lives by reversing ageing-induced and cancer-induced NK cell suppression. According to Chapter 3, RBAC demonstrates strong immunomodulatory properties. RBAC can also augment phagocytic cellular functions by promoting the growth of macrophage and neutrophil antimicrobial/antitumour phenotypes. Research has shown that RBAC can modulate the production of many cytokines which have antitumour applications. Moreover, RBAC is an inducer for the maturation and activation of dendritic cells which play a crucial role in priming the adaptive immune response against invading pathogens and cell mutations. While not an antioxidant in its own right, RBAC has also been shown to augment the body's natural antioxidant defence mechanisms against free radicals. RBAC also shows antiangiogenesis effects in blocking the vascular endothelial growth factor pathway and thus inhibiting tumour development. Dr Jason Ashworth at Manchester Metropolitan

University in the UK as the author of Chapter 4 said the following: there is accumulating evidence that rice bran extracts such as RBAC have profound effects on mediating inflammation, with the therapeutic potential in several chronic inflammatory conditions including asthma, diabetes, obesity, dermatitis, arthritis, liver injury, neuroinflammation, and cancer.

The next four chapters detail the therapeutic applications of RBAC in cancer. Scientific evidence for the use of RBAC as a supporting treatment for cancer is explored. Chapter 5 describes the integrative oncology which is a branch of integrative medicine that combines the treatment of cancer patients with complementary and conventional modalities. It aims to enhance the effect of conventional treatments and optimise the quality of life and emotional health of cancer patients. RBAC is a nutraceutical that has been shown to improve the quality of life in breast cancer patients, reduce the chemotherapy side effects, enhance the response rate to chemotherapy in liver cancer, provide radioprotection effects in cervical cancer, augment immunity in multiple myeloma, and prolong survival of patients in many case studies. According to Dr Tibor Hajto at Medical University Pecs in Hungary as the author of Chapter 6, tumour-induced dysregulation of the innate immune system leads to decreased function of type 1 effector cells and a predominance of type 2 cells, promoting the development of tumours. As such, we must learn to manipulate this regulation by increasing the

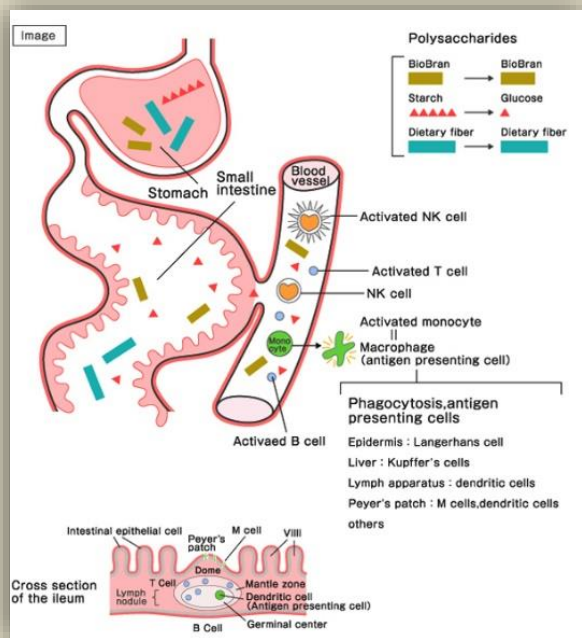
type 1 innate immune effector activity and diminishing the type 2 system. This balance can also play an important role in the sensitivity of tumour cells to innate effectors such as NK cells, which are regulated by the expressions of stress-related receptors on tumour cells. RBAC has been shown to activate the type 1 effector cells, resulting in evidence-based antitumour effect. Chapter 7 explores the benefits of using RBAC as a supportive treatment for cancer patients undergoing radiotherapy because radiotherapy employed to improve the quality of life (QoL) remains a clinical challenge due to its side effects. The chapter also aims to analyse its impact on clinical outcomes based on several factors including haematologic parameters, nutritional status, treatment-related toxicities, and QoL. Then, Chapter 8 expands the scope of QoL in health. Inflammation is a hallmark of cancer, with the inflammatory process aiding the proliferation and survival of malignant cells, suppressing the adaptive immune response while promoting tumour metastasis. Research has shown that rising systemic inflammation inversely correlates with the patients' QoL and is a vital underlying mechanism leading to poor prognostic outcomes in advanced cancer. Chronic inflammation alongside cancer treatment regimens also contributes to microglial activation in the central nervous system, causing neuroinflammation. This leads to behavioural comorbidities such as depression, anxiety, fatigue, cognitive impairment, and neuropathic pain, which also adversely affect the QoL. Cancer-related malnutrition due to the



activation of systemic inflammation is also a predictive factor for poor QoL. Hence, targeting inflammation is a promising approach to enhancing cancer patients' QoL and improving treatment outcomes. RBAC modulates the immune and inflammatory responses via direct absorption into the bloodstream and indirect modulation of gut microbiota. Numerous case studies and clinical trials have demonstrated improved QoL using RBAC among cancer patients.

The last section of the book aims at exploring the potential use of RBAC in different medical conditions, and each includes the scientific evidence behind it. Chapter 9 defines chronic inflammation as friendly-fire in ageing and disease. Inflammation triggered by leukocytes produces and spreads reactive oxygen species. Such oxidative stress affects host cells via friendly-fire. One of the worthiest preventive strategies for lifestyle-related disease is suppression or downregulation of friendly-fire attacks not by drugs but by potent food supplements such as RBAC. In Chapter 10, the potential anti-HIV activity of RBAC was demonstrated via augmentation of lymphocyte proliferation in an HIV-infected individual. RBAC supplementation could potentially improve CD4+ T cells and CD4/CD8 ratio in HIV positive patients. These findings support the potential use of RBAC as an adjunct therapy for people living with HIV. Chapter 11 introduces the effects of RBAC on hepatitis in animals and humans. Hepatitis induced by D-galactosamine is a well-studied animal research model that is histologically and pathologically similar to the

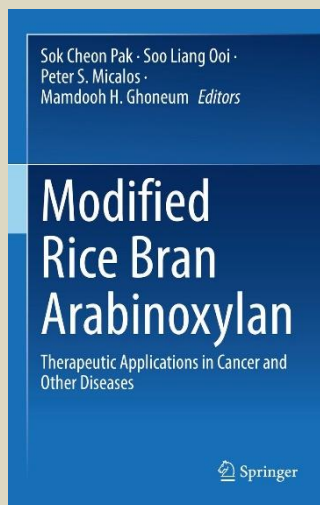
effects of human hepatitis B virus. Supplementation with RBAC suppressed the D-galactosamine-induced hepatitis and interleukin-18 expression in rats. Moreover, RBAC supplementation (1 g/day for 3 months) showed suppressed viremia levels in patients infected with chronic hepatitis C virus. In patients with nonalcoholic fatty liver disease, RBAC (1 g/day for 90 days) lowered alkaline phosphatase significantly compared to placebo. The final Chapter 12 highlights the effects of RBAC on a range of acute and chronic conditions. Chronic fatigue syndrome is a persistent relapsing fatigue not alleviated by rest and exacerbated by moderate exercise. RBAC may support persons with chronic fatigue syndrome. Common colds and influenza are the most common diseases in humans. RBAC shows beneficial effects in reducing the physical stress associated with acute respiratory tract infections. RBAC also reveals therapeutic potential for diabetes mellitus through multiple pathways. In addition, RBAC improves the symptoms of irritable bowel syndrome which may be associated with its anti-inflammatory and immune-modulatory effects. Furthermore, RBAC administration in chronic rheumatism have shown improvements in pain, QoL, and serological assessments.



to the vast number of people, even those in academia who work outside the fields of nutrition and dietary supplementation. I can recount plenty of lectures where I discussed my research findings to learned healthcare professionals who, before hearing me speak, had no knowledge about the health benefits of polysaccharides in general and RBAC specifically. Thus, I congratulate the editorial team for putting together a book that hopefully will help spread the word about the importance of RBAC and its impressive effects...."

This book publication aligns with the motto of 'For the public good' to provide benefit to others especially cancer patients.

In the foreword of the book, Dr John E. Lewis who is past full-time and current Voluntary Associate Professor in the Department of Psychiatry and Behavioral Sciences at the University of Miami Miller School of Medicine said "... As I reflect on the voluminous level of information that has been published about RBAC's impressive effects, including that of my own work, I am grateful for the opportunity to have participated in this ongoing and continuing journey of discovery. Truly, the information about RBAC's effects should be spread everywhere so that more people can benefit from it. To that end, I believe that Dr. Pak and his colleagues have chosen a very worthy cause by writing and editing this book to summarize all the current information about RBAC in the scientific literature. Unfortunately, lots of beneficial information in the global repository of peer-reviewed journal articles is not easily accessible



Pak SC, Ooi SL, Micalos PS, Ghoneum MH. (2023). Modified Rice Bran Arabinoxylan: Therapeutic Applications in Cancer and Other Diseases. Springer Nature

<https://link.springer.com/book/10.1007/978-981-19-5735-2>.

He is a physiologist and an associate professor at Charles Sturt University's School of Dentistry and Medical Sciences. He currently leads and guides research into nutraceuticals to provide relevant and impactful clinical applications.

# 차세대 과학기술리더 지원사업

한국과학기술단체총연합회(KOFST)에서 글로벌 차세대 과학기술인재를 육성, 지원하고 교류협력 네트워크를 구축하고자 차세대 과학기술리더 지원사업을 시행하였습니다.

## 1. 한민족청년과학도포럼 (YGF) · 차세대과학기술리더포럼 (YPF)

사업 내용: 국내 및 재외동포 청년과학기술자들 간 상호교류의 장을 마련하여 한민족 유대감 제고 및 인적 네트워크 구축.

지원 대상: 1997년 이후 출생한 이공계 대학생 (YGF) 및 1988년 이후 출생한 대학원생/박사후 연구원 (YPF).

개최: 2023.7.3 ~ 2023.7.7 (4박 5일)

장소: 서울 호텔 삼성

주요 일정

- 7월 3일 (월): 등록, Ice Breaking, 개회식, 기조강연, 그룹토론, 국가별 대표 발표, 환영 만찬
- 7월 4일 (화): 문화탐방
- 7월 5일 (수): 세계한인과학기술자대회 개회식 참석, 국가별 부스탐방, 포스터 발표, 그룹토론 결과 발표, 네트워킹 디너
- 7월 6일 (목): 산업 시찰
- 7월 7일 (금): 세계한인과학기술자대회 차세대 세션 참석, 폐회식

## 2. 차세대 과학기술리더 교류협력

사업 내용: 재외 차세대 한인 기술 세대간의 공감대 형성 및 역량 강화 프로그램 (학술교류, 교육훈련, 창업지원 등) 설계 지원

운영기간: 2023.4.1(협약시) ~ 2023.12.31

지원대상: 차세대 과학기술인 지원 프로그램 발굴/수행중인 재외과협

## 3. 차세대 과학기술리더 NET

사업 내용: 국외 차세대 과학기술 인재로 구성된 소규모 연구교류 활동 기반 지원

운영기간: 2023.4.1(협약시) ~ 2023.12.1

지원대상: 이공계관련 연구, 융합, 창업을 위한 학술활동을 수행하는 3~6인으로 구성된 소규모 그룹 (환경/재생/보건 관련분야 연구 그룹 우선적 선발), 재외과협 가입자 대상

지원규모: 25팀 내외

지원내용: 그룹별 200만원 내외

## 호주주재한국대사 면담

**Wan-joong Kim, Ambassador of the Republic of Korea to the commonwealth of Australia**

Date: 17 Feb 2023 Korean embassy, Canberra, Australia

The President, Executive Officer, and ACT Chair of KASEA were invited by the Korean Ambassador who was newly appointed to the Commonwealth of Australia in Feb 2023. The excellency and the invitees had an extended discussion about the research capability of Korean academics in Australia including UNSW. The excellency hosted me for lunch at the Commonwealth House in Canberra

### **Outcome**

Excellency is very willing to support the upcoming conference of Australia-Korea leadership in Science and Technologies and agreed to provide an opening speech. The Embassy will apply some funds to support this event.



Photo: Excellency middle left, Prof Han middle right, Dr Tae Hwan Kim the second right and A.Prof Duk Choi the second left

# AKC 2023

11<sup>TH</sup> ASIA-KOREA CONFERENCE 2023

SCIENCE AND TECHNOLOGY  
FOR SUSTAINABLE FUTURES

17<sup>TH</sup> ~ 19<sup>TH</sup> NOVEMBER 2023  
Crowne Plaza Coogee Beach Hotel,  
Sydney, Australia



## KASEA Partnership

Korean Federation of Science and Technology Societies



Hyundai Motor Company



Korean Scientists and Engineers Association in Singapore



**싱가폴 한인과학기술자협회**  
Korean Scientists and Engineers Association in Singapore

Korean Scientists and Engineers Association in China

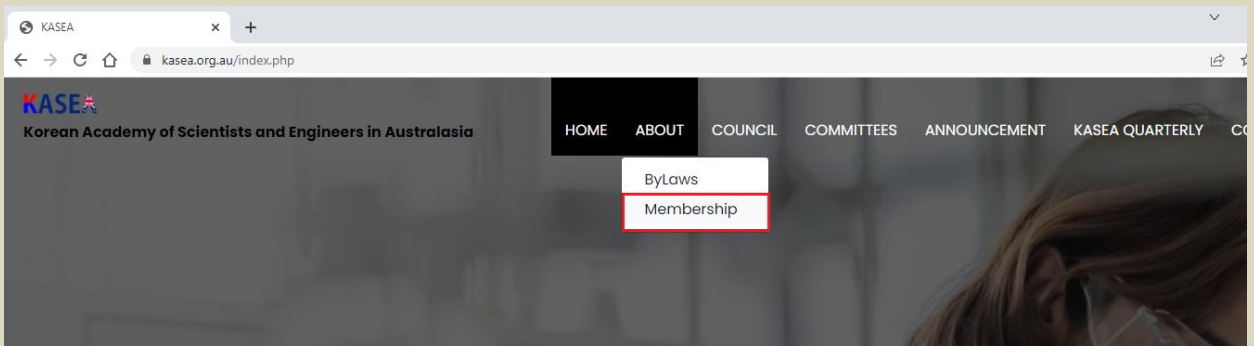


**재중한인과학기술자협회**  
Korean Scientists and Engineers Association in China

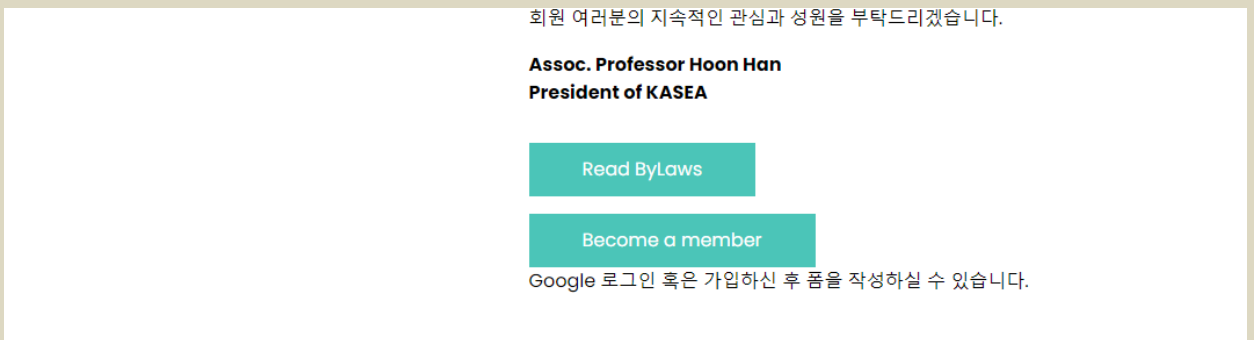
# KASEA 회원등록 안내

**Step 1:** KASEA 홈페이지에 접속합니다 (https://kasea.org.au/index.php)

**Step 2:** 홈페이지에서 "ABOUT" 에 마우스를 놓으면 하단과 같이 "MEMBERSHIP" 메뉴가 보입니다.  
"MEMBERSHIP"을 클릭합니다.



또는, ABOUT 클릭 후, 페이지 하단에 있는 "BECOME A MEMBER" 메뉴를 클릭합니다.



**Step 3:** Google 로그인 화면에서 본인의 Google계정으로 로그인 합니다.

(Google 계정이 없으신 경우, Google에 가입을 하신 후에 신청서를 작성하실 수 있습니다).

**Step 4:** Google 가입 신청서를 작성하신 후 제출 하시면 회원등록이 완료됩니다.

## KASEA 회원명부





별첨: KASEA 회원 명부

호주

강경
강병호
강승하
강연석
강원희
공태경
구태량
국상훈
권수현
권지수
권혁채
김대영
김대철
김도림
김동성
김동진
김동환
김문용
김석민
김선우
김성호
김세정
김수민
김수지
김승연
김승원
김양석
김연경
김선우
김연우
김영기
김영일
김영태
김영호
김우정
김우진
김유진
김일구
김장현
김정수

김정호
김종원
김진만
김진수
김진우
김태균
김태환
김태훈
김푸름
김호성
김호완
나인순
남궁윤
도정환
류동열
류리슬
류혁
류호경
문강민
문천용
박미라
박미정
박석천
박영선
박영하
박주연
박주영
박한길
박혜준
박홍주
배준석
백승우
백종민
백천우
백혜영
성현신
손성욱
손재호
손제니
송안나
송주희
송태민
송태윤
송혜진

신현승
심창범
안의준
양지현
여인영
염순자
오정민
우진희
우창환
유선형
유정현
유정흠
유태호
유희
윤두만
윤미희
윤성희
윤정호
윤해나
윤흥기
윤환진
유희근
이경미
이근우
이동기
이두원
이미화
이민철
이보경
이보라
이상경
이상민
이상엽
이상윤
이상희
이새미
이성은
이세형
이수길
이승현
이승호
이영춘

이우진
이우진
이익재
이재호
이정률
이정아
이주현
이지원
이지윤
이진
이진우
이호준
이효율
임경준
임남규
임삼성
임소연
임수아
임지후
임태준
장경오
장서원
장세은
장원근
장윤경
장은정
장일한
장준혁
전유정
정상철
정신호
정예원
정원철
정윤진
정윤희
정지수
정현석
조성수
조새롬
조유진
조재향
조준형

조해원
진양일
채민경
채소룡
천우성
최덕용
최보배
최성민
최영현
최재훈
최진웅
최진희
최현
하우석
하재인
한소연
한주성
한신찬
한용희
한이규
한정훈
함경진
허윤
허장욱
허재영
허정민
현강산
현혜주
홍석희
홍진범
황성근
황창민

이성경
이예진
이피터
임성훈
장지휘
전현우
진이송
차한솔
최재인
한선경

한국

김용식
이승진

뉴질랜드

김광수
김보라
김서현
김설중
심준보
윤영미
이동현

