

INACTIVATION OF PROTEIN TYROSINE PHOSPHATASE (PTPASE)-LINKED INSULIN RECEPTOR MEDIATED THE HYPOGLYCEMIC EFFECT OF VANADYL SULFATE

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Background: Recent clinical studies have well established that the treatment of antidiabetic medicine to the patient caused several problems including physical and mental burden, insulin tolerance and desensitization, antidiabetic agent resistance and severe side effects. To overcome these important problems and find the replacements for the conventional and unspecific antidiabetic-targeted medicines, we attempted to develop a new pharmacological agent for diabetic treatment using a specific target of protein signaling-dependent insulin activity. The selective activation of the certain enzyme-linked insulin receptor produced a specific effect with corroborative its biological potency and limitative several side effects. The specific compound that could be selective bounded with key enzyme of insulin receptor was explored in this research.

Objective: The study was design to investigate the relationship of selective and specificity inactivation of protein tyrosine phosphatase by vanadyl sulfate with their hypoglycemic effects. Then, we were explore the molecular mechanisms of vanadyl sulfate mediated a decreasing of blood glucose level through specific binding with certain enzymes in the insulin signaling pathway. The combination of molecular and histopathological approaches was applied to measure several parameters that was indicated the involved-protein/enzymes in the insulin signaling pathway.

Method; The diabetic model was elicited by twice intraperitoneal injection of streptozotocin 100 mg/kg followed with 50 mg/kg. Diabetes mellitus occurred on day 26 after streptozotocin injection and it was represented with the increasing of blood glucose concentration from $155,6 \pm 40,2$ mg/dl to $251,1 \pm 48,9$ mg/dl. The various dose of a selective protein tyrosine phosphatase (PTPase) inhibitor, vanadyl sulphate, were administered once a day for 7 consecutive days.

Result: The in vivo studies shown that orally repeated treatment with vanadyl sulfate at 30-200 mg/kg, produced a significant decrease of blood glucose level in the streptozotocin-induced diabetic mice (30 mg/kg, $p = 0,002$; 50 mg/kg, $p=0,001$; 100 mg/kg, $p=0,017$; 150 mg/kg, $p=0,001$; 200 mg/kg, $p=0,001$), whereas the lower doses have no effect (1 mg/kg, $p=0,128$; 10 mg/kg, $p=0,223$). Using histopathological approaches, we found that repeated treatment with vanadyl sulfate was drastically attenuated the destruction of beta-pancreas cells, atrophy of both skeletal muscle and adipose cells, and accumulation of fatty acid in liver. Although, the vanadyl sulfate has a potential effect as hypoglycemic agent, the mechanism underlying an insulin-mimicry effect was unclear until now. Currently, our group have succeed to develop the adipose cell culture, that were highly expressed the functional insulin receptors. These works could be conferred an expectation to study the mechanisms underlying insulin-mimicry effect of vanadyl sulfate as a prospective antidiabetic agent.

Conclusion: Finally, we conclude that vanadyl sulfate have a potency as antidiabetic with specific enzyme target. We, therefore, propose here that administration of vanadyl sulfate may pave the way for the new strategy for the control of diabetic state.

Key word : antidiabetic, diabetic-animal model, insulin signaling pathway, streptozotocin, vanadyl sulfate.

AOP
Asian Conference on Clinical Pharmacy



Faculty of Pharmacy Airlangga University

THE **8**th ASIAN
CONFERENCE
ON
CLINICAL
PHARMACY

Hyatt Regency Surabaya Hotel
Surabaya, Indonesia
July 1 - 4, 2008

Toward Harmonisation of Education
and Practice of Asian Clinical Pharmacy

Editors

Arie Sulistyarini | Bambang Subakti Zulkarnain | Junaidi Khotib
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Welcome Message





Welcome Message from the Chairman, The 8th ACCP

Distinguished Guests, Ladies, and Gentlemen

Welcome to the 8th Asian Conference on Clinical Pharmacy (ACCP) in Indonesia. It is a great honor for us to host the 8th ACCP this year. Our theme this year is Toward Harmonization of Education and Practice of Asian Clinical Pharmacist, highlight the importance of harmonization, education, practice and research for clinical pharmacist in hospital and community in Asia.

This meeting is attended by participants from 15 countries (Australia, Canada, China, Indonesia, Japan, Korea, Malaysia, the Philippines, Qatar, Singapore, Thailand, Saudi Arabia, UK, USA, Vietnam). We are much honored to have distinguished speakers from Asia, Australia, the US and the UK with us this year. The meeting is consisted of plenary talk, country representative presentation, oral and poster presentation and also interactive session. There are also board meeting, exhibition, farewell dinner, hospital and university visit, city tour and post-conference tour to Bali.

The organizing committee would like to thank Rector of Airlangga University, Dean of Faculty of Pharmacy Airlangga University, Director General of Pharmaceutical Services and Medical Devices, Steering Committee and Organizing Committee and to all sponsors who support this conference. Without an excellent cooperation and supports of all those we mention above, this conference would not have been successful. Also, I would like to express my sincere gratitude to all country representatives for their excellent support and advices in the preparation of the meeting. We also owe special thanks to our colleagues from the USA, Canada, Australia and UK for their valuable contribution.

I hope that all delegates will greatly benefit from this meeting. I truly wish that this meeting will be a successful one and become one of the memorable moments in your life and hope that you will enjoy the beauty of Indonesia and enjoy our hospitality.

Best regards,

Dr. Suharjono, MS, Apt
Chairman of the 8th ACCP



Welcome Message from the President of ACCP

Dear colleagues

I'd like to extend a warm-hearted welcome to you all gathered here to participate in the 8th Asian Conference on Clinical Pharmacy (the 8th ACCP)

On behalf of the ACCP committee, I would like to thank all of you for being here but particularly recognize the time and effort that the members of the ACCP have expend in order to presented their various organization and be with us today to cover a number of subjects that will have an impact on education, pharmacy practice and the health care system for the development of clinical pharmacy in Asian area. Asian countries have made remarkable development on clinical pharmacy. However, we have to work harder to contribute to the newly evolving clinical pharmacist role for future's pharmacist role in clinical services.

For the successful congress during the next four days, the ACCP Committee did our best to build a sophisticated scientific program, as well as to provide everyone of you the best schedules

We hope this important congress will be a fruitful and enjoyable occasion for all participants learning and sharing information with respect to scientific accomplishments and the frontiers of on-going worldwide clinical services in the field of clinical pharmacy.

In addition, I would like to express my sincere thanks to the organizing Committee for their effort.

Finally, I cannot not stop telling you about the contributions of our colleagues from the USA, Canada and Australia. Without their transfusions, this congress could not be possible.

Again, welcome to the congress and hope to see you at the 9th ACCP in Seoul Korea.

Sincerely yours,

Wan Gyoon Shin, Pharm.D., Ph.D
Elected President, Asian Conference on Clinical Pharmacy



Welcome Message from Director General of Pharmaceutical Services and Medical Devices

It is indeed a great pleasure for me to address a message to welcome the coming 8th Asian Conference on Clinical Pharmacy (ACCP) which will be held on 1-4 July 2008 in Surabaya, Indonesia. I would like, at the very outset, to express our appreciation to The Faculty of Pharmacy, University of Airlangga, the Indonesian Pharmacist Association, The Indonesian Association of Hospital Pharmacy and The Indonesian Association of Community Pharmacy that has been selected by all members of ACCP as the host of this important conference.

I am most pleased that the theme of the conference is "Toward Harmonization of Education and Practice of Asian Clinical Pharmacy".

In the globalization era, we are facing now, the theme that has been chosen is very appropriate, where almost no entry barrier of trade for goods, as well as, for services including health care services, in particular pharmaceutical care services. Therefore, Clinical Pharmacy Practice is one of the important aspects for achieving a good health care services for all people.

I do hope that this event would bring a fruitful discussion on sharing the best practice, expertise, experience, and role on clinical pharmacy services. The cooperation and relationship that have been made among pharmacists in Asia region would be beneficial to formulate a dynamic clinical pharmacy in Asia. This event would be a valuable forum on our struggle to reach patient-centered and population-based care that optimizes medication therapy; to manage health system resources to improve therapeutic outcomes; and to improve the life quality of the patient.

Dra. Kustantinah, Apt., M.App.Sc.
Director General of Pharmaceutical Services and Medical Devices



Welcome Message from Rector of Airlangga University

Assalamu alaikum warahmatullahi wabarakatuh

It is indeed my honor to have the opportunity to be with all participants of the 8th ACCP conference today.

As pharmaceutical care has been the main issue in our today's world, this conference provides a great opportunity for clinical pharmacists to build better communications. Such effort becomes one of the best ways to share experiences among participants from various countries on specific issues which could enhance the future performance of clinical pharmacists.

More importantly, through a better communication, an increasing awareness on the important role of clinical pharmacists that provides patient care which optimizes medication therapy and promotes health, wellness and disease prevention will soon be achieved. Through such achievements, we have been started showing our contribution to the development of a healthy society, which later can bring us to reach our vision in building a healthy world in the coming years.

I would also like to express my sincere hope, that through this conference, a better collaboration among clinical pharmacists from Asian countries must be created to open an opportunity for conducting researches which will contribute to the generation of new knowledge that advances human health and quality of life. This is a prerequisite toward harmonization of education and practice of Asian Clinical Pharmacy.

In this special event, allow me to acknowledge all participants of the conference, that Airlangga University is greatly honored to be chosen as the host of this important gathering in Asian Pharmacy Circle. May I take this opportunity to thank all of you for coming to the 8th ACCP and hope that this is a fruitful and enjoyable experience and that you will join us again for future ACCP events.

I thank the organizing committee for a wonderful work that make the conference a success.

Lastly, I wish all participants to have a good time and enjoy staying in Surabaya.

Wassalamualaikum warahmatullahi wabarakatuh

With my best wishes,

Prof. Dr. H. Fasich
Rector



The 8th ACCP Organizing Committee





The 8th ACCP Organizing Committee

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