

174  
B60/p6

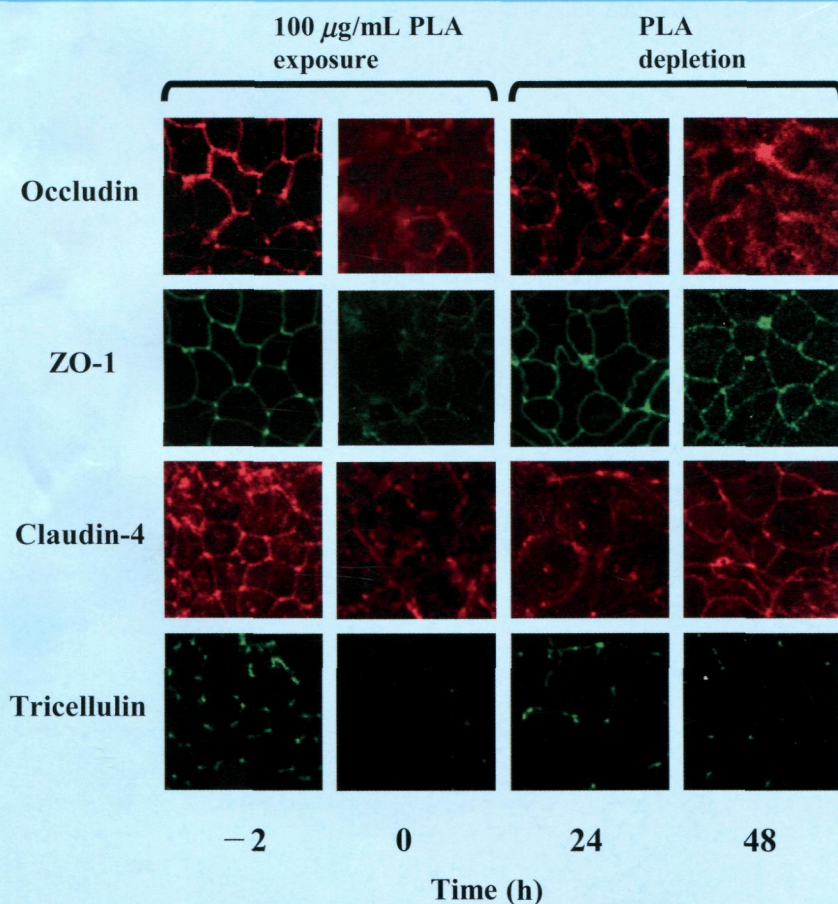
# Biological and Pharmaceutical Bulletin

March 2013

BPBLEO 36 (3) 331-500 (2013)

Vol. 36 No. 3

Biological and Pharmaceutical Bulletin succeeds to Journal of Health Science from 2012.



Cover Figure PLA Opens Reversibly the Paracellular Spaces

pp. 432-441

**Highlighted Paper** • PLA Opens Reversibly the Paracellular Spaces  
(Tsutomu Yamaki *et al.*) pp. 432-441



THE PHARMACEUTICAL SOCIETY OF JAPAN

<http://bpb.pharm.or.jp>



# Biological and Pharmaceutical Bulletin

Vol. 36, No. 3 March 2013

© Copyright, 2013, by the Pharmaceutical Society of Japan.

## Contents

### Regular Articles

- Inhibitory Effects of Acorn Extract on Glutamate-Induced Calcium Signaling in Cultured Rat Hippocampal Neurons  
**J. Lee, Y. J. Hong, J. S. Yang, S. Cho, S. J. Hahn, and S. H. Yoon** . . . . . 331
- Mast Cell Stabilizing Effect of (–)-Elema-1,3,11(13)-trien-12-ol and Thujopsene from *Thujopsis dolabrata* Is Mediated by Down-Regulation of Interleukin-4 Secretion in Antigen-Induced RBL-2H3 Cells  
**C.-H. Kim, T. Lee, I. Oh, K.-W. Nam, K. H. Kim, K.-B. Oh, J. Shin, and W. Mar** . . . . . 339
- Cyclohexanediol Bis-Ethylhexanoate Inhibits Melanogenesis of Murine B16 Melanoma and UV-Induced Pigmentation in Human Skin  
**J. H. Lim, S.-H. Park, M. R. Kim, B.-S. Yoo, J. C. Yang, I. W. Cheong, J. H. Kim, and J. H. Cho** . . . . . 346
- Protective Effects of the Fermented Milk Kefir on X-Ray Irradiation-Induced Intestinal Damage in B6C3F1 Mice  
**K. Teruya, Y. Myojin-Maekawa, F. Shimamoto, H. Watanabe, N. Nakamichi, K. Tokumaru, S. Tokumaru, and S. Shirahata** . . . . . 352
- Efficacy of Disinfectants against Naturally Occurring and Artificially Cultivated Bacteria  
**M. Suwa, S. Oie, and H. Furukawa** . . . . . 360
- The Mechanism of Action of Bufalin in Inhibition of Lipid Droplet Accumulation in Mouse Macrophages  
**K. Kobayashi, T. Ohshiro, D. Matsuda, W. Jiang, B. Hong, S. Si, and H. Tomoda** . . . . . 364
- Liver Injury Induced by Thirty- and Fifty-Nanometer-Diameter Silica Nanoparticles  
**K. Isoda, E. Tetsuka, Y. Shimizu, K. Saitoh, I. Ishida, and M. Tezuka** . . . . . 370
- Short-Term Hyperthermia Promotes the Sensitivity of MCF-7 Human Breast Cancer Cells to Paclitaxel  
**Y. Lin, Z. Liu, Y. Li, X. Liao, S. Liao, S. Cen, L. Yang, J. Wei, and X. Hu** . . . . . 376
- Percolation Analysis in Electrical Conductivity of Madin-Darby Canine Kidney and Caco-2 Cells by Permeation-Enhancing Agents  
**M. Washiyama, N. Koizumi, M. Fujii, M. Kondoh, K. Yagi, and Y. Watanabe** . . . . . 384
- Suppressive Effects of SuHeXiang Wan on Amyloid- $\beta$ 42-Induced Extracellular Signal-Regulated Kinase Hyperactivation and Glial Cell Proliferation in a Transgenic *Drosophila* Model of Alzheimer's Disease  
**S. H. Park, S. Lee, Y. K. Hong, S. Hwang, J. H. Lee, S. M. Bang, Y.-K. Kim, B.-S. Koo, I.-S. Lee, and K. S. Cho** . . . . . 390
- Mollugin Inhibits the Inflammatory Response in Lipopolysaccharide-Stimulated RAW264.7 Macrophages by Blocking the Janus Kinase-Signal Transducers and Activators of Transcription Signaling Pathway  
**Z.-G. Zhu, H. Jin, P.-J. Yu, Y.-X. Tian, J.-J. Zhang, and S.-G. Wu** . . . . . 399
- Pentamines as Substrate for Human Spermine Oxidase  
**K. Takao, A. Shirahata, K. Samejima, R. A. Casero Jr., K. Igarashi, and Y. Sugita** . . . . . 407
- A Simple Liquid Chromatography–Tandem Mass Spectrometry Method for Determination of Plasma Fentanyl Concentration in Rats and Patients with Cancer Pain  
**T. Hisada, M. Katoh, K. Hitoshi, Y. Kondo, M. Fujioka, Y. Toyama, H. Ieda, S. Gocho, and M. Nadai** . . . . . 412
- Statistical Evaluation of Single-Photon Emission Computed Tomography Image Using Smoothed Bootstrap Method  
**M. Tsukamoto, A. Hatabu, Y. Takahashi, H. Matsuda, K. Okamoto, N. Yamashita, and T. Takagi** . . . . . 417
- Effect of Rice Cell-Derived Human Granulocyte-Macrophage Colony-Stimulating Factor on 5-Fluorouracil-Induced Mucositis in Hamsters  
**J. H. Won, J. E. Ji, K. H. Ahn, S. K. Kim, J. M. Choi, H. C. Ha, H. M. Kim, C. K. Yun, K. Han, and D. K. Kim** . . . . . 425

* Poly-L-arginine-Induced Internalization of Tight Junction Proteins Increases the Paracellular Permeability of the Caco-2 Cell Monolayer to Hydrophilic Macromolecules <b>T. Yamaki, K. Ohtake, K. Ichikawa, M. Uchida, H. Uchida, S. Ohshima, K. Juni, J. Kobayashi, Y. Morimoto, and H. Natsume</b> .....	432
Mechanism of the Tissue-Specific Action of the Selective Androgen Receptor Modulator S-101479 <b>K. Furuya, N. Yamamoto, Y. Ohyabu, T. Morikyu, H. Ishige, M. Albers, and Y. Endo</b> .....	442
cDNA Cloning and Functional Analysis of Minipig Uridine Diphosphate-Glucuronosyltransferase 1A1 <b>Y. Miyake, K. Mayumi, H. Jinno, T. Tanaka-Kagawa, S. Narimatsu, and N. Hanioka</b> .....	452
 <b>Notes</b>	
Rapid Degradation of Poly(ADP-ribose) after Injection into the Mouse Bloodstream <b>Y. Okajima, T. Yoshida, H. Fujimori, J. Wang, H. Harada, Y. Suzuki, H. Suzuki, and M. Masutani</b> . .	462
Fimasartan, Anti-hypertension Drug, Suppressed Inducible Nitric Oxide Synthase Expressions <i>via</i> Nuclear Factor-Kappa B and Activator Protein-1 Inactivation <b>S. Ryu, J.-S. Shin, Y.-W. Cho, H. K. Kim, S. H. Paik, J. H. Lee, Y. H. Chi, Ji H. Kim, Je H. Kim, and K.-T. Lee</b> .....	467
$\beta_2$ -Agonist Clenbuterol Suppresses Bacterial Phagocytosis of Splenic Macrophages Expressing High Levels of Macrophage Receptor with Collagenous Structure <b>K. Shirato, S. Sato, M. Sato, Y. Hashizume, K. Tachiyashiki, and K. Imaizumi</b> .....	475
Prevention of Bone Loss after Ovariectomy in Mice with Preferential Overexpression of the Transcription Factor Paired Box-5 in Osteoblasts <b>H. Fujita, E. Hinoi, T. Watanabe, T. Iezaki, M. Takamori, S. Ogawa, and Y. Yoneda</b> .....	481
Alginate Enhances Excretion and Reduces Absorption of Strontium and Cesium in Rats <b>Y. Idota, H. Harada, T. Tomono, K. Morimoto, S. Kobayashi, C. Kakinuma, C. Miyajima, F. Kasahara, and T. Ogihara</b> .....	485
Paracellular Barrier and Tight Junction Protein Expression in the Immortalized Brain Endothelial Cell Lines bEND.3, bEND.5 and Mouse Brain Endothelial Cell 4 <b>T. Watanabe, S. Dohgu, F. Takata, T. Nishioku, A. Nakashima, K. Futagami, A. Yamauchi, and Y. Kataoka</b> .....	492
Effect of Poly-L-arginine on Intestinal Absorption of Hydrophilic Macromolecules in Rats <b>T. Yamaki, M. Uchida, Y. Kuwahara, Y. Shimazaki, K. Ohtake, M. Kimura, H. Uchida, J. Kobayashi, M. Ogihara, Y. Morimoto, and H. Natsume</b> .....	496

**About the cover:** In the Caco-2 cell monolayers exposed to 100  $\mu$ g/mL PLA, tight junction (TJ) proteins (occludin, ZO-1, claudin-4, and tricellulin) were disappeared from the cell-cell junctions. Following depletion after treatment with PLA, all of them were re-localized around TJs. ZO-1 was rapidly and completely recovered within 24 h. Claudin-4 was also fully re-localized by 48 h after PLA depletion. In addition, occludin and tricellulin were mostly re-localized at 48 h after PLA depletion. This result suggests that the effect of PLA on the distribution of TJ proteins is reversible. See the article by Yamaki *et al.* on page 432 of this issue.

\* *Highlighted Paper selected by Editor-in-Chief*

*The selection is based upon originality, scientific contributions, methodological pertinence, and composition.*