

ANNUAL PUBLICATIONS

Department of Dental Pharmacology

1993.1.-2000.3.

I. Staffs and Students (April, 1999)

Professor	Keiichi Ohya
Associate Professor	Shohei Kasugai
Research Associate	Yukihiko Tamura
	Kazuhiro Aoki
Technologist	Maki Sumikawa
Secretary	Tomoko Daito
Post-graduate Student	Tatsuya Shibata
	Daisuke Horie
JSPS Postdoctoral Fellow	Wagner R. Duarte
Post Graduate Student	Yasuyuki Iwasa
	Hidehiko Noji
	Pornpoj Fuangtharnthip
	Satoshi Yoneda
	Tomohiro Yamazoe
	Kaori Ikeda
	Takuya Ogawa
	Daisuke Ito
	Kazumi Ookubo
Special Student	W. L. Lin

II. Educational Outline of Graduate Course

Pharmacology is situated between the basic and clinical sciences and is important for dental students. There is a growing demand on the dental clinicians to know huge knowledge of drugs and how to use them for patients. For these purpose, the first lecture is aimed to teach the scientific aspects of pharmacology and how drugs act on the various body system. The second lecture deals with drugs of medical and dental fields and the last with drugs of special importance of dentistry. Dental students learn the principle of pharmacology through laboratory practice. Following these learning, they must acquire an adequate background for drug use in general practice in dentistry.

III. Research Subjects

Main Research Theme

The research in our department traditionally focuses on clarifying the mechanism of formation and resorption of mineralized tissues. Especially following subjects are now under investigation.

1. Study of mechanism of bone resorption using rats fed with a low-calcium diet.
2. Effects of bisphosphonates on the mechanism of enamel formation and bone resorption.
3. Effects of phosphodiesterase 4 (PDE4) in bone.
4. Roles of S100A4 calcium binding protein in periodontal ligament and bone.
5. Induction of metallothionein in hard tissues.

IV. Publications (January, 1993-March, 2000)

A. Original Articles

- 1) Ohya K. , Ishige N. , Mataka S. and Ogura H. : Effects of microtubule inhibitors on the amelogenesis in rat incisor at the maturation stage. *Folia pharmacol. Japon.* 102:323-331, 1993 (in Japanese)
- 2) Ohya K. , Sumikawa M. and Ogura H. : Observation of bone and incisor dentin of rabbits ingested with rhodamine-labeled albumin by confocal laser scanning microscope. *J. stomatological Society, Japan.* 60:398-407, 1993 (in Japanese)
- 3) Ohya K. , Sumikawa M. and Ogura H. : Observations of polychromatic fluorescent labeling of bone and dentin in rat by confocal laser scanning microscope. *J. Hard Tissue Biol.* 2:13-19. 1993
- 4) Ohya K. , Yasui M. and Ogura H. Fluorescent labelling of rhodamine-labelled albumin in rabbit incisor dentin. *J. stomatological*

- society, Japan. 60:525-531, 1993
- 5) Ohya K., H. Ogura, : The effect of colchicine or vinblastine on the blood calcium level in rats. Euro J. Pharmacol. Environmental Toxicology and Pharmacology Section. 248: 111-119, 1993
 - 6) Arai N., K. Ohya, H. Ogura, : Osteopontin mRNA expression during bone resorption : an *in situ* hybridization study of induced ectopic bone in the rat. Bone and Mineral. 22: 129-145, 1993
 - 7) Kasugai S., H. Ogura, : The effects of cytoskeletal inhibitors on the collagen gel contraction by dog periodontal ligament fibroblasts *in vitro*. Archs Oral Biol. 38(9): 785-792, 1993
 - 8) Kasugai S., S. Shibata, S. Suzuki, T. Susami, H. Ogura, : Characterization of a system of mineralized-tissue formation by rat dental pulp cells in culture. Archs Oral Biol. 38(9): 769-777, 1993
 - 9) Soekanto A. , K. Ohya, H. Ogura, : The effect of sodium salicylate on the osteoclast-like cell formation and bone resorption in a mouse bone marrow culture. Calcif. Tissue. Int. 54: 290-295, 1994
 - 10) Soekanto A. , : Inhibition of osteoclast-like cell formation by sodium salicylate and indomethacin in mouse bone marrow culture. Jap. J. Pharmacol. 65: 27-34, 1994
 - 11) Ogura H. : A role of serum albumin in dentine formation . J. Stomatological Society, Japan. 61:413-426, 1994 (in Japanese)
 - 12) Yano H., K. Ohya, T. Amagasa. : Effects of insulin on *in vitro* bone formation in fetal rat parietal bone. Endocrine Journal. 41(3): 293-300, 1994
 - 13) Ohya K., M. Sumikawa and H. Ogura, : Incorporation of rhodamine-labeled albumin into the rabbit incisor dentin by osmotic pump. Dentistry in Japan. 31: 36-38, 1994
 - 14) Kaneko H., T. Koyama, T. Asou, K. Aoki and K. Ohya, : The effect of HACHIMI-JIO-GAN, a kanpo metabolism of rats treated by GnRH agonist. J. Jpn. Menopause Soc. 3(2): 225-232, 1995
 - 15) Arai N., K. Ohya, S. Kasugai, H. Shimokawa, S. Oida, H. Ogura and T. Amagasa, : Expression of bone sialoprotein mRNA during bone formation and resorption induced by colchicine in rat tibial bone marrow cavity. J. Bone and Mineral Res. 10(8): 1209-1217, 1995
 - 16) Kasugai S., S. Oida, T. Iimura, N. Arai, K. Takeda. K. Ohya, S. Sasaki, : Expression of prostaglandin E receptor subtypes in bone: expression of EP2 in bone development. Bone. 17(1): 1-4, 1995
 - 17) Sodek J. , Chen J., T. Nagata, S. Kasugai, Todescan R Jr. , Li I.W. and Kim R H. :Regulation of osteopontin expression in osteoblasts. Annals of the New York Academy of Sciences. 760: 223-241, 1995
 - 18) Waki Y., K. Miyamoto, S. Kasugai and K. Ohya. : Osteoporosis-like changes in Walker carcinoma 256-bearing rats, not accompanied with hypercalcemia or parathyroid hormone-related protein production. Jap. J. Cancer Res. 86(5): 470-476, 1995
 - 19) Yamada Y. , Takagi Y. , Shimokawa H. , Ono H. and Ohya K. : The study of enamel formation of rat incisors by *in situ* hybridization-the effect of bisphosphonate-. Archives of Comparative Biology of Tooth Enamel 4:85-92, 1995 (in Japanese)
 - 20) Soekanto A. , S. Kasugai, S. Mataka, K. Ohya and H. Ogura. : Toxicity of camphorated phenol and camphorated parachlorophenol in dental pulp cell culture. J. Endodontics. 22(6): 284-289, 1996
 - 21) Ozawa S. and S. Kasugai, : Evaluation of implant materials (hydroxyapatite, glass-ceramics, titanium) in rat bone marrow stromal cell culture. Biomaterials. 17(1): 23-29, 1996
 - 22) Kondo H., T. Ohyama, K. Ohya and A. Kasugai, : Temporal changes of mRNA expression of matrix proteins and parathyroid hormone and parathyroid hormone-related protein (PTH/PTHrP)receptor in bone development. J. Bone and Mineral Res. 12(12): 2089-2097, 1997
 - 23) Sawanishi H., H. Suzuki, S. Yamamoto, Y. Waki, S. Kasugai, K. Ohya, N. Suzuki, K. Miyamoto and K. Takagi. : Selective inhibitors of cyclic AMP-specific phosphodiesterase: Hepatocyte-condensed purines. J. Med. Chemistry. 40: 3248-3253, 1997
 - 24) Miyamoto K., Y. Waki, T. Horita, S. Kasugai and K. Ohya, : Reduction of bone loss by denbufylline, an inhibitor of phosphodiesterase 4. Biochemical Pharmacology. 54: 613-617, 1997
 - 25) Suzuki K., K. Aoki and K. Ohya. : Effects of surface roughness of titanium implants on bone remodeling activity of femur in rabbits. Bone. 21(6): 507-514, 1997
 - 26) Ogawara M., Aoki K., Okiji T., and Suda H. : Effect of ascorbic acid deficiency on primary and reparative dentinogenesis in non-ascorbate-synthesizing ODS rats. Archives of Oral Biology, vol. 42(10-11):695-704, 1997
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 - 29) Osyczka Anna Laczka, Maria Laczka, Shohei Kasugai, Keiichi Ohya, Behavior of bone marrow cells cultured on three different

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- 31) Takano Y., H. Sakai, O. Baba, T. Terashima, K. Ohya, N. Kurosaki, : Demonstration of putative Ca-binding domains in dentin matrix of rat incisors after daily injection of 1-hydroxyethylidene-1, 1-bisphosphonate (HEBP). Eur J Oral Sci. 106(Suppl 1): 274-281, 1998.
- 32) Duarte W. R., S. kasugai, T. Iimura, S. Oida, K. Takenaga, K. Ohya and I. Ishikawa, : CDNA cloning of S100 calcium-binding proteins from bovine periodontal ligament and their expression in oral tissues. J. Dent. Res. 77(9): 1694-1699 1998
- 33) Y. Tamura and K. Ohya, : Induction of metallothionein in bone marrow of cadmium injected rat. Dentistry in Japan. 34: 37-40 1998
- 34) Aoki K., A. Houghton, R. Murali, W.C. Horn, C. Gardner, M.I. Greene, and R. Baron : A peptide antagonist mimicking the TNF recognition site on the TNF receptor inhibits vitamin D₃/PGE₂- and RANK Ligand-induced osteoclastogenesis *in vitro*.. J. Bone Mineral Res. 214: 178, 1999.
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- 39) Hirayama N., Y. Miura, K. Iijima, K. Ohya, S. Irie and D. Fujimoto, Increased urinary excretion of pyridinium crosslinks in streptozotocin-induced diabetic rats. Biomedical Research. 20(3):133-140, 1999
- 40) Duarte W. R., T. Iimura, K. Takenaga, K. Ohya, I. Ishikawa, : Extracellular role of S100A4 calcium-binding protein in the periodontal ligament. Biochemical and Biophysical Research Communications. 255:416-420 1999
- 41) Duarte W. R., Y. Mikuni-Takagaki, T. Kawase, T. Iimura, S. Oida, K. Ohya, K. Takenaga, I. Ishikawa, S. Kasugai, : Effects of mechanical stress on the mRNA expression of S100A4 and cytoskeletal components by periodontal ligament cells. J. Medical and Dental Sciences. 46(3):117-122, 1999
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- 45) Tamura Y., George P. Wysocki. and M. George Cherian. : Immunohistochemical localization of metallothionein in the developing teeth of cadmium injected rats. Archs Oral Biol. 44(1), 49-53, 1999
- 46) Kanno Z., T. Shibata, A. Umezawa, S. Kasugai, K. Ohya, K. Soma, : Intracellular calcium response in cultured bone cells under mechanical stress. The Journal of Japan Orthodontic Society. 58(6): 389-395, 1999
- 47) Ohya K., Informatic education to undergraduate students at tokyo medical and dental university. The Journal of Japanese Association for Dental Education. 15(2):183-188, 2000 (in Japanese)
- 48) Aoki K., DiDomenico E., Sims N. A., Mukopadhyay K., Neff L., Houghton A., Amling M., Levy J. B., Horne W. C., and Baron R. : The tyrosine phosphatase SHP-1 is a negative regulator of osteoclastogenesis and osteoclast resorbing activity : increased resorption and osteopenia in *me^c/me^c* mutant mice. Bone, 25(3): 261-267, 1999
- 49) Fuangtharnthip Pornpoj, Y. Yamada, Y. Takagi, K. Ohya, : Autoradiographic investigation of the effect of 1-hydroxyethylidene-1, 1-bisphosphonate on matrix protein synthesis and secretion by secretory ameloblasts in rat incisors. Archs. Oral Biol. 45: 495-506, 2000
- 50) Kasugai S., R. Fujisawa, Y. Waki, K. Miyamoto, K. Ohya, Selective drug delivery system to bone: small peptide (Asp)6 Conjugation. J. Bone Mineral Res. 15(5): 936-943, 2000
- 51) Yamada Y., Pornpoj Fuangtharnthip, Y. Tamura, Y. Takagi, K. Ohya, : Gene expression and immunolocalization of amelogenin in enamel hypoplasia induced by successive injections of bisphosphonate in rat incisors. Archs Oral Biol. 45: 207-215, 2000

B. Books

- 1) Ogura H., K. Ohya, : Colchicine: Applications for hard tissue research. In: Pharmacological Approach to the Study of the Formation and the Resorption Mechanism of Hard Tissues. (ed. by H. Ogura) Ishiyaku Euro America, Tokyo. : 1-22, 1994
- 2) Ohya K., : Rats fed with a low-calcium diet as an *in vivo* experimental model for bone resorption. In : Pharmacological Approach to the Study of the Formation and the Resorption Mechanism of Hard Tissues. (ed. by H. Ogura) Ishiyaku Euro America, Tokyo. : 93-114, 1994
- 3) Ohya K., Kasugai S. : Calcium regulating hormones. In: Modern Dental Pharmacology. Ishiyaku. 541-546, 1998 (in Japanese)
- 4) Ohya K. , Kuroki K. : Antiseptics and disinfectants. In: Modern Dental Pharmacology. Ishiyaku, 1998 (in Japanese)
- 5) Kasugai S., : Bone marrow stromal cell culture as a bone formative experimental system. : Technical points and applications to bone research of hard tissues.(ed. by H. Ogura) Ishiyaku Euro America, Tokyo. : 175-186, 1994
- 6) Kasugai S. : Thyroid Hormone. In: Modern Dental Pharmacology. Ishiyaku. 370-372, 1998 (in Japanese).
- 7) Kasugai S. : Androgens, Estrogen. In: Modern Dental Pharmacology. Ishiyaku. 372-378, 1998 (in Japanese)
- 8) Kasugai S. : Pulpotomy and drugs, Puppectomy and drugs. In: Modern Dental Pharmacology. Ishiyaku. 636-638, 1998 (in Japanese)
- 9) Kasugai S. : Endodontics and drugs. In: Modern Dental Pharmacology. Ishiyaku. 638-644, 1998 (in Japanese)

C. Review Articles

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- 2) Wagner Rodrigues Duarte : Implications of S100A4 calcium-binding protein in periodontal ligament cell biology. Tokyo, 1999, The Doctoral Thesis.
- 3) Yoshihiro Waki : Study of the mechanism of osteoporosis-like bone loss in Walker carcinoma256-bearing rats and its usefulness for osteopenia models. , Kanazawa, 1999, The Doctoral Thesis. (in Japanese)
- 4) Tamura Y. and Ogura H. : Metal-binding proteins in oral tissues. J. Stomatological Society Japan. 61(1):163, 1994 (in Japanese)
- 5) Ogra H. and Ohya K. : Physiology and pharmacokogy of hard tissue-effect of chemicals on the formation and the resorption mechanism of tooth and bone. Folia Pharmcol. Japon. 105: 305-318, 1995 (in Japanese)
- 6) Ohya K. : Experimental pharmacology of hard tissue research. J. Stomatological Society Japan. 62:473-482, 1995 (in Japanese)
- 7) Ohya K. : Hard tissue and pharmacology-study of hard tissue functions by the method of experimental pharmacology. Dental Outbook. 87:1155-1160, 1996 (in Japanese)
- 8) Kasugai S. , Ohya K. : Effect of phosphodiesterase inhibitors in bone: the potentiality in osteopenia treatment. J. Stomatological Society Japan. 63(2):432, 1996 (in Japanese)
- 9) Ohya K. and Aoki K. : Osteoporosis and regulation of bone resorption by drug treatment. Dental Aspect. 11:29-42, 1997 (in Japanese)
- 10) Kasugai S. : Periodontal tissue development and periodontal tissue regeneration. Dental Aspect. 11(2):15-20, 1997 (in Japanese)
- 11) Duarte W. R. , Ikeda K. , Ishikawa I. , Kasugai S. , Ohya K. , Iimura T. , Oida S. : Expression of S100A4 calcium-binding protein and its physiological roles in periodontal tissue. J. Stomatological Society Japan. 66:223, 1999 (in Japanese)
- 12) Kasugai S. , Miyamoto K. : Potential of PDE4 inhibitors in the treatment of osteopenia. Drug News and Perspectives 12(9):529-534, 1999
- 13) Ohya K. : Clinical applications of bisphosphonates in dentistry. The Bone. 13(4):105-110 1999