

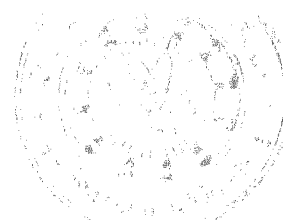
บรรณานุกรม

- Alptekin, N. O., Ari, H., Haliloglu, S., Alptekin, T., Serpek, B., & Ataoglu, T. (2005). The effect of endodontic therapy on periapical exudate neutrophil elastase and prostaglandin-E2 levels. *J Endod*, 31(11), 791-795.
- Anderson, L. M., Dumsha, T. C., McDonald, N. J., & Spitznagel, J. K., Jr. (2002). Evaluating IL-2 levels in human pulp tissue. *J Endod*, 28(9), 651-655.
- Andonovska, B., Dimova, C., & Panov, S. (2008). Matrix metalloproteinases (MMP-1, -8, -13) in chronic periapical lesions. *Vojnosanit Pregl*, 65(12), 882-886.
- Bachmeier, B. E., Nerlich, A. G., Boukamp, P., Lichtinghagen, R., Tschesche, H., Fritz, H., et al. (2000). Human keratinocyte cell lines differ in the expression of the collagenolytic matrix metalloproteinases-1,-8, and -13 and of TIMP-1. *Biol Chem*, 381(5-6), 509-516.
- Barkhordar, R. A., Hussain, M. Z., & Hayashi, C. (1992). Detection of interleukin-1 beta in human periapical lesions. *Oral Surg Oral Med Oral Pathol*, 73(3), 334-336.
- Belmar, M. J., Pabst, C., Martinez, B., & Hernandez, M. (2008). Gelatinolytic activity in gingival crevicular fluid from teeth with periapical lesions. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 105(6), 801-806.
- Bennett, J. H., Morgan, M. J., Whawell, S. A., Atkin, P., Roblin, P., Furness, J., et al. (2000). Metalloproteinase expression in normal and malignant oral keratinocytes: stimulation of MMP-2 and -9 by scatter factor. *Eur J Oral Sci*, 108(4), 281-291.
- Bigg, H. F., Morrison, C. J., Butler, G. S., Bogoyevitch, M. A., Wang, Z., Soloway, P. D., et al. (2001). Tissue Inhibitor of Metalloproteinases-4 Inhibits But Does Not Support the Activation of Gelatinase A via Efficient Inhibition of Membrane Type 1-Matrix Metalloproteinase. *Cancer Res*, 61(9), 3610-3618.
- Birkedal-Hansen, H. (1993). Role of cytokines and inflammatory mediators in tissue destruction. *J Periodontal Res*, 28(6 Pt 2), 500-510.
- Birkedal-Hansen, H., Moore, W. G. I., Bodden, M. K., Windsor, L. J., Birkedal-Hansen, B., DeCarlo, A., et al. (1993). Matrix Metalloproteinases: A Review. *Critical Reviews in Oral Biology & Medicine*, 4(2), 197-250.
- Bozzuto, G., Ruggieri, P., & Molinari, A. (2010). Molecular aspects of tumor cell migration and invasion. *Ann Ist Super Sanita*, 46(1), 66-80.
- Bradford, M. M. (1976). A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding. *Anal Biochem*, 72, 248-254.

- Buzoglu, H. D., Unal, H., Ulger, C., Mert, S., Kucukyildirim, S., & Er, N. (2009). The zymographic evaluation of gelatinase (MMP-2 and -9) levels in acute and chronic periapical abscesses. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 108(5), e121-126.
- Chang, Y. C., Yang, S. F., Lai, C. C., Liu, J. Y., & Hsieh, Y. S. (2002). Regulation of matrix metalloproteinase production by cytokines, pharmacological agents and periodontal pathogens in human เอ็นไคดปริทันต์ fibroblast cultures. *J Periodontal Res*, 37(3), 196-203.
- Corotti, M. V., Zambuzzi, W. F., Paiva, K. B., Menezes, R., Pinto, L. C., Lara, V. S., et al. (2009). Immunolocalization of matrix metalloproteinases-2 and -9 during apical periodontitis development. *Arch Oral Biol*, 54(8), 764-771.
- Damiens, C., Fortun, Y., Charrier, C., Heymann, D., & Padrines, M. (2000). Modulation by soluble factors of gelatinase activities released by osteoblastic cells. *Cytokine*, 12(11), 1727-1731.
- de Paula-Silva, F. W., D'Silva, N. J., da Silva, L. A., & Kapila, Y. L. (2009). High matrix metalloproteinase activity is a hallmark of periapical granulomas. *J Endod*, 35(9), 1234-1242.
- Ding, Y., Haapasalo, M., Kerosuo, E., Lounatmaa, K., Kotiranta, A., & Sorsa, T. (1997). Release and activation of human neutrophil matrix metallo- and serine proteinases during phagocytosis of *Fusobacterium nucleatum*, *Porphyromonas gingivalis* and *Treponema denticola*. *J Clin Periodontol*, 24(4), 237-248.
- Egeblad, M., & Werb, Z. (2002). New functions for the matrix metalloproteinases in cancer progression. *Nat Rev Cancer*, 2(3), 161-174.
- Fravalo, P., Menard, C., & Bonnaure-Mallet, M. (1996). Effect of *Porphyromonas gingivalis* on epithelial cell MMP-9 type IV collagenase production. *Infect Immun*, 64(12), 4940-4945.
- Guan, S. M., Shu, L., Fu, S. M., Liu, B., Xu, X. L., & Wu, J. Z. (2009). *Prevotella intermedia* upregulates MMP-1 and MMP-8 expression in human เอ็นไคดปริทันต์ cells. *FEMS Microbiol Lett*, 299(2), 214-222.
- Gusman, H., Santana, R. B., & Zehnder, M. (2002). Matrix metalloproteinase levels and gelatinolytic activity in clinically healthy and inflamed human dental pulps. *Eur J Oral Sci*, 110(5), 353-357.
- Hadler-Olsen, E., Fadnes, B., Sylte, I., Uhlin-Hansen, L., & Winberg, J. O. (2011). Regulation of matrix metalloproteinase activity in health and disease. *FEBS J*, 278(1), 28-45.

- Hanemaaijer, R., Sorsa, T., Konttinen, Y. T., Ding, Y., Sutinen, M., Visser, H., et al. (1997). Matrix metalloproteinase-8 is expressed in rheumatoid synovial fibroblasts and endothelial cells. Regulation by tumor necrosis factor-alpha and doxycycline. *J Biol Chem*, 272(50), 31504-31509.
- Hannas, A. R., Pereira, J. C., Granjeiro, J. M., & Tjaderhane, L. (2007). The role of matrix metalloproteinases in the oral environment. *Acta Odontol Scand*, 65(1), 1-13.
- Hayrinen-Immonen, R., Sorsa, T., Nordstrom, D., Malmstrom, M., & Konttinen, Y. T. (1993). Collagenase and stromelysin in recurrent aphthous ulcers (RAU). *Int J Oral Maxillofac Surg*, 22(1), 46-49.
- Hipps, D. S., Hembry, R. M., Docherty, A. J., Reynolds, J. J., & Murphy, G. (1991). Purification and characterization of human 72-kDa gelatinase (type IV collagenase). Use of immunolocalisation to demonstrate the non-coordinate regulation of the 72-kDa and 95-kDa gelatinases by human fibroblasts. *Biol Chem Hoppe Seyler*, 372(4), 287-296.
- Takehashi, S., Stanley, H. R., & Fitzgerald, R. J. (1965). The Effects of Surgical Exposures of Dental Pulp in Germ-Free and Conventional Laboratory Rats. *Oral Surg Oral Med Oral Pathol*, 20, 340-349.
- Kato, K., Hara, A., Kuno, T., Kitaori, N., Huilan, Z., Mori, H., et al. (2005). Matrix metalloproteinases 2 and 9 in oral squamous cell carcinomas: manifestation and localization of their activity. *J Cancer Res Clin Oncol*, 131(6), 340-346.
- Kiili, M., Cox, S. W., Chen, H. Y., Wahlgren, J., Maisi, P., Eley, B. M., et al. (2002). Collagenase-2 (MMP-8) and collagenase-3 (MMP-13) in adult periodontitis: molecular forms and levels in gingival crevicular fluid and immunolocalisation in gingival tissue. *J Clin Periodontol*, 29(3), 224-232.
- Korostoff, J. M., Wang, J. F., Sarment, D. P., Stewart, J. C., Feldman, R. S., & Billings, P. C. (2000). Analysis of in situ protease activity in chronic adult periodontitis patients: expression of activated MMP-2 and a 40 kDa serine protease. *J Periodontol*, 71(3), 353-360.
- Kuo, M. L., Lamster, I. B., & Hasselgren, G. (1998a). Host mediators in endodontic exudates. I. Indicators of inflammation and humoral immunity. *J Endod*, 24(9), 598-603.
- Kuo, M. L., Lamster, I. B., & Hasselgren, G. (1998b). Host mediators in endodontic exudates. II. Changes in concentration with sequential sampling. *J Endod*, 24(10), 636-640.
- Leonardi, R., Caltabiano, R., & Loreto, C. (2005). Collagenase-3 (MMP-13) is expressed in periapical lesions: an immunohistochemical study. *Int Endod J*, 38(5), 297-301.

- Makela, M., Salo, T., Uitto, V. J., & Larjava, H. (1994). Matrix metalloproteinases (MMP-2 and MMP-9) of the oral cavity: cellular origin and relationship to periodontal status. *J Dent Res*, 73(8), 1397-1406.
- Malemud, C. J. (2006). Matrix metalloproteinases (MMPs) in health and disease: an overview. *Front Biosci*, 11, 1696-1701.
- Martin-De Las Heras, S., Valenzuela, A., & Overall, C. M. (2000). The matrix metalloproteinase gelatinase A in human dentine. *Arch Oral Biol*, 45(9), 757-765.
- Matsuo, T., Ebisu, S., Nakanishi, T., Yonemura, K., Harada, Y., & Okada, H. (1994). Interleukin-1 alpha and interleukin-1 beta periapical exudates of infected root canals: correlations with the clinical findings of the involved teeth. *J Endod*, 20(9), 432-435.
- Matsuo, T., Nakanishi, T., & Ebisu, S. (1995). Immunoglobulins in periapical exudates of infected root canals: correlations with the clinical findings of the involved teeth. *Endod Dent Traumatol*, 11(2), 95-99.
- Molander, A., Warfvinge, J., Reit, C., & Kvist, T. (2007). Clinical and radiographic evaluation of one- and two-visit endodontic treatment of asymptomatic necrotic teeth with apical periodontitis: a randomized clinical trial. *J Endod*, 33(10), 1145-1148.
- Moller, A. J., Fabricius, L., Dahlen, G., Ohman, A. E., & Heyden, G. (1981). Influence on periapical tissues of indigenous oral bacteria and necrotic pulp tissue in monkeys. *Scand J Dent Res*, 89(6), 475-484.
- Moseley, R., Stewart, J. E., Stephens, P., Waddington, R. J., & Thomas, D. W. (2004). Extracellular matrix metabolites as potential biomarkers of disease activity in wound fluid: lessons learned from other inflammatory diseases? *Br J Dermatol*, 150(3), 401-413.
- Nair, P. N. (1997). Apical periodontitis: a dynamic encounter between root canal infection and host response. *Periodontol* 2000, 13, 121-148.
- Nair, P. N. (2004). Pathogenesis of apical periodontitis and the causes of endodontic failures. *Crit Rev Oral Biol Med*, 15(6), 348-381.
- Overall, C. M., Wrana, J. L., & Sodek, J. (1991). Transcriptional and post-transcriptional regulation of 72-kDa gelatinase/type IV collagenase by transforming growth factor-beta 1 in human fibroblasts. Comparisons with collagenase and tissue inhibitor of matrix metalloproteinase gene expression. *J Biol Chem*, 266(21), 14064-14071.
- Paula-Silva, F. W., da Silva, L. A., & Kapila, Y. L. (2010). Matrix metalloproteinase expression in teeth with apical periodontitis is differentially modulated by the modality of root canal treatment. *J Endod*, 36(2), 231-237.



- Prikk, K., Maisi, P., Pirila, E., Sepper, R., Salo, T., Wahlgren, J., et al. (2001). In vivo collagenase-2 (MMP-8) expression by human bronchial epithelial cells and monocytes/macrophages in bronchiectasis. *J Pathol*, 194(2), 232-238.
- Rai, B., Kharb, S., Jain, R., & Anand, S. C. (2008). Biomarkers of periodontitis in oral fluids. *J Oral Sci*, 50(1), 53-56.
- Rifas, L., Halstead, L. R., Peck, W. A., Avioli, L. V., & Welgus, H. G. (1989). Human osteoblasts in vitro secrete tissue inhibitor of metalloproteinases and gelatinase but not interstitial collagenase as major cellular products. *J Clin Invest*, 84(2), 686-694.
- Shimauchi, H., Takayama, S., Miki, Y., & Okada, H. (1997). The change of periapical exudate prostaglandin E2 levels during root canal treatment. *J Endod*, 23(12), 755-758.
- Shimauchi, H., Takayama, S., Narikawa-Kiji, M., Shimabukuro, Y., & Okada, H. (2001). Production of interleukin-8 and nitric oxide in human periapical lesions. *J Endod*, 27(12), 749-752.
- Shin, S. J., Lee, J. I., Baek, S. H., & Lim, S. S. (2002). Tissue levels of matrix metalloproteinases in pulps and periapical lesions. *J Endod*, 28(4), 313-315.
- Sjogren, U., Figdor, D., Persson, S., & Sundqvist, G. (1997). Influence of infection at the time of root filling on the outcome of endodontic treatment of teeth with apical periodontitis. *Int Endod J*, 30(5), 297-306.
- Sorsa, T., Tjaderhane, L., & Salo, T. (2004). Matrix metalloproteinases (MMPs) in oral diseases. *Oral Dis*, 10(6), 311-318.
- Sulkala, M., Larmas, M., Sorsa, T., Salo, T., & Tjaderhane, L. (2002). The localization of matrix metalloproteinase-20 (MMP-20, enamelysin) in mature human teeth. *J Dent Res*, 81(9), 603-607.
- Thomas, G. T., Lewis, M. P., & Speight, P. M. (1999). Matrix metalloproteinases and oral cancer. *Oral Oncol*, 35(3), 227-233.
- Tiranathanagul, S., Pattamapun, K., Yongchaitrakul, T., & Pavasant, P. (2004). MMP-2 activation by *Actinobacillus actinomycetemcomitans* supernatant in human PDL cells was corresponded with reduction of TIMP-2. *Oral Dis*, 10(6), 383-388.
- Tjaderhane, L., Larjava, H., Sorsa, T., Uitto, V. J., Larmas, M., & Salo, T. (1998). The activation and function of host matrix metalloproteinases in dentin matrix breakdown in caries lesions. *J Dent Res*, 77(8), 1622-1629.
- Tjaderhane, L., Palosaari, H., Wahlgren, J., Larmas, M., Sorsa, T., & Salo, T. (2001). Human odontoblast culture method: the expression of collagen and matrix metalloproteinases (MMPs). *Adv Dent Res*, 15, 55-58.

- Tonetti, M. S., Freiburghaus, K., Lang, N. P., & Bickel, M. (1993). Detection of interleukin-8 and matrix metalloproteinases transcripts in healthy and diseased gingival biopsies by RNA/PCR. *J Periodontal Res*, 28(6 Pt 2), 511-513.
- Tsai, C. H., Chen, Y. J., Huang, F. M., Su, Y. F., & Chang, Y. C. (2005). The upregulation of matrix metalloproteinase-9 in inflamed human dental pulps. *J Endod*, 31(12), 860-862.
- Visse, R., & Nagase, H. (2003). Matrix metalloproteinases and tissue inhibitors of metalloproteinases: structure, function, and biochemistry. *Circ Res*, 92(8), 827-839.
- Wahlgren, J., Maisi, P., Sorsa, T., Sutinen, M., Tervahartiala, T., Pirila, E., et al. (2001). Expression and induction of collagenases (MMP-8 and -13) in plasma cells associated with bone-destructive lesions. *J Pathol*, 194(2), 217-224.
- Wahlgren, J., Salo, T., Teronen, O., Luoto, H., Sorsa, T., & Tjaderhane, L. (2002). Matrix metalloproteinase-8 (MMP-8) in pulpal and periapical inflammation and periapical root-canal exudates. *Int Endod J*, 35(11), 897-904.
- Wang, Z., Juttermann, R., & Soloway, P. D. (2000). TIMP-2 is required for efficient activation of proMMP-2 in vivo. *J Biol Chem*, 275(34), 26411-26415.
- Yang, W. K., Kim, M. R., Lee, Y., Son, H. H., & Lee, W. (2006). Effect of calcium hydroxide-treated *Prevotella nigrescens* on the gene expression of matrix metalloproteinase and its inhibitor in MG63 cells. *J Endod*, 32(12), 1142-1145.
- บริศว์รักษ์, ส. (2007). บทบาทของเอนไซม์เมทริกเมทัลโลโปรตีเอส และการแสดงออกในมะเร็ง. *J Health Res*, 21(3), 239-249.