

เอกสารอ้างอิง

เกรียงศักดิ์ สายธนู, เกรียงศักดิ์ พุนสุข และ สมครา เหลืองทองคำ. 2524. การแพร่กระจายของ
วิบrio พาราเซโนลัยดิกัส ในน่านน้ำไทย ผลการสำรวจปี 2521-2524. การสัมมนาครั้งที่ 2
การวิจัยคุณภาพน้ำและทรัพยากริชีตในน่านน้ำไทย สำนักงานคณะกรรมการวิจัย
แห่งชาติ กรุงเทพ. หน้า 255-261.

บุญเยี่ยม เกียรติวุฒิ, อุ่น เกียรติวุฒิ และ สุกิจ อังคศุภาก 2527. โรคติดต่อระหว่างคนและสัตว์
หน้า 92-96. กรุงเทพ : บัณฑิตการพิมพ์.

ประดิษฐ์ พงศ์ทองคำ. 2541. พันธุศาสตร์ พิมพ์ครั้งที่ 1. กรุงเทพ : สำนักพิมพ์มหาวิทยาลัย
เกษตรศาสตร์

สรินทร์ ปะโลกคณาภุล. 2536. พันธุศาสตร์เบื้องต้น. พิมพ์ครั้งที่ 1. กรุงเทพ : สำนักพิมพ์
มหาวิทยาลัยเกษตรศาสตร์

อรสา สุตเชียรกุล. 2541. โรคติดเชื้อ. พิมพ์ครั้งที่ 2. กรุงเทพ:บริษัทโอลิสติก พับลิชชิ่ง จำกัด

Abbott, S.L., Powers, C., Kaysner, C.A., Takeda, Y., Ishibashi, M., Joseph, S.W. and Janda, J.M.
1989. Emergence of a restricted bioserovar of *Vibrio parahaemolyticus* as the predominant cause of *Vibrio*-associated gastroenteritis on the West Coast of the United States and Mexico. *J. Clin. Microbiol.* 27: 2891-2893.

Allen, R. and Baumann, P. 1971. Structure and arrangement of flagella in species of the genus *Beneckeia* and *Photobacterium fisheri*. *J. Bacteriol.* 107: 295-302.

Alouf, J.E. and Freer, J.H. 1999. The Comprehensive Sourcebook of Bacterial Protein Toxin.
2nd ed London: Academic Press.

- Altekuse, S., Bishop, R., Baldy, L.M., Thomson, S.G., Wilson, S.A., Ray, B.J. and Griffin, P.M. 2000. *Vibrio* gastroenteritis in the US Gulf of Mexico region: the role of raw oysters. *Epidemiol. Infect.* 124: 489-495.
- Andrews, L. S., D. L. Park and Y. P. Chen. 2000. Low temperature pasteurization to reduce the risk of *Vibrio* infections from raw shell-stock oysters. *Food Addit. Contam.* 17: 787-791.
- Anonymous 1997. Outbreak of *Vibrio parahaemolyticus* related to raw oysters in British Columbia. *Can. Comm. Dis. Rep.* 23: 145-148.
- Anonymous 1999a. *Vibrio parahaemolyticus*, Japan, 1996-1998. *WER* (43): 361-363.
- Anonymous 1999b. *Vibrio parahaemolyticus*, Taiwan: Background. Promed-digest , 28 May 1999
- Aono, E., Sugita, H., Kawasaki, J., Sakakibara, H., Takahashi, T., Endo, K. and Deguchi, Y. 1997. Evaluation of the polymerase chain reaction method for identification of *Vibrio vulnificus* isolated from marine environments. *J. Food Prot.* 60: 81-83.
- Arias, C.R., Macian, M.C., Azar, R., Garay, E. and Pujalte, M.J. 1999. Low incidence of *Vibrio vulnificus* among *Vibrio* isolates from sea water and shellfish of the western Mediterranean coast. *J. Appl. Microbiol.* 86: 125–134.
- Baba, K., Shirai, H., Terai, A., Kumagai, K., Takeda, Y. and Nishibuchi, M. 1991. Similarity of the *tdh* gene-bearing plasmids of *Vibrio cholerae* non-O1 and *Vibrio parahaemolyticus*. *Microb. Pathog.* 10: 61-70.
- Baker, J.W.H. and Gangarosa, E.J. 1974. Food Poisoning due to *Vibrio parahaemolyticus*. *Annu. Rev. Med.* 25: 75-81.

- Baffone, W., Pianetti, A., Bruscolini, F., Barbieri, E. and Citterio, B. 2000. Occurrence and expression of virulence-related properties of *Vibrio* species isolated from widely consumed seafood products. International Journal of Food Microbiology. 54: 9-18.
- Balows, A., Truper, H.G., Dworkin, M., Harder, W. and Schleifer, K.H. 1992. The Prokaryotes. 2nd ed New York: Springer-Verlag New York Inc.
- Bauer, A., Ostensvik, O., Florvag, M., Ormen, O. and Rorvik, L.M. 2006. Occurrence of *Vibrio parahaemolyticus*, *V. cholerae*, and *V. vulnificus* in Norwegian Blue Mussels (*Mytilus edulis*). Appl. Environ. Microbiol. 72: 3058-3061.
- Baumann, P., Baumann, L. and Mandel, M. 1971. Taxonomy of marine bacteria: the genus *Beneckeia*. J. Bacteriol. 107: 268-294.
- Baumann, P. and Schubert, R.H.W. 1984. Facultatively anaerobic Gram negative rods. Family II. In *Vibrionaceae*. Bergey's Manual of Systemic Bacteriology ed. Holt, S. G. and Krieg, N.R. pp. 5-6-555. Baltimore: Williams & Wilkins.
- Bean, N.H. and Griffin, P.M. 1990. Foodborne disease outbreaks in the United States 1973-1987: pathogens, vehicles, and trends. J. Food Prot. 53: 804-817.
- Belas, R., Simon, M. and Silverman, M. 1986. Regulation of lateral flagella gene transcription in *Vibrio parahaemolyticus*. J. Bacteriol. 167: 210-218.
- Blake, P.A. 1984. Prevention of foodborne disease caused by *Vibrio* species. In: Colwell RR (ed). *Vibrios in environment*., pp. 579-591. New York: John Wiley and Sons.
- Bonner, J.R., Coker, A.S., Berryman, C.R. and Pollock, H.M. 1983. Spectrum of *Vibrio infections* in a Gulf Coast community. Ann. Intern. Med. 99: 464-469.

- Cabanillas-Beltran, H., L.L.-M.E, R. Romero, A. Espinoza, A. Garcia-Gasca, M. Nishibuchi, M. Ishibashi and Gomez-Gil, B. 2006. Outbreak of gastroenteritis caused by the pandemic *Vibrio parahaemolyticus* O3:K6 in Mexico. FEMS. Microbiol. Lett. 265: 76-80.
- Cavallo, R.A. and Stabili, L. 2002. Presence of *vibrios* in seawater and *Mytilus galloprovincialis* (Lam.) from the Mar Piccolo of Taranto (Ionian Sea). Water Res. 36: 3719-3726.
- Cavallo, R.A., Stabili, L., Acquaviva, M.I. and Rizzi, C. 1998. Distribuzione e significato ecologico di *Vibrionaceae* nella zona costiera dell'Adriatico meridionale. Biologia. Marina Mediterranea. 5: 775-779
- CCFH. 2002. Codex Committee on Food Hygiene. Discussion paper on risk management strategies for *Vibrio* spp. in seafood. CX/FH 03/5-Add.3. Available from: http://www.codexalimentarius.net/ccfh35/fh03_01e.htm
- CDC. 1998. Outbreak of *Vibrio parahaemolyticus* associated with eating raw oysters- Pacific Northwest, 1997. MMWR, 47: 457-462.
- CDC. 1999. Outbreak of *Vibrio parahaemolyticus* infection associated with eating raw oysters and clams harvested from Long Island Sound-Connecticut, New Jersey, and New York, 1998. MMWR, 48: 48-51.
- Chan, K.Y., Woo, M.L., Lam, L.Y. and French, G.L. 1989. *Vibrio parahaemolyticus* and other halophilic *vibrios* associated with seafood in Hong Kong. J. Appl. Bacteriol. 66: 57-64.
- Cheng, W., Juang, F.M. and Chen, J.C. 2004. The immune response of Taiwan abalone *Haliotis diversicolor supertexta* and its susceptibility to *Vibrio parahaemolyticus* at different salinity levels. Fish Shellfish Immunol. 16: 295-306.

- Cherwonogrodzky, J.W. and Clark, A.G. 1981. Effect of pH on the production of the Kanagawa hemolysin by *Vibrio parahaemolyticus*. Infect. Immun. 34: 115-119.
- Chiang, M.L., Ho, W.L. and Chou, C.C. 2006. Response of *Vibrio parahaemolyticus* to ethanol shock. Food Microbiol. 23: 461-467.
- Chiou, C.S., Hsu, S.Y., Chiu, S.I., Wang, T.K. and Chao, C.S. 2000. *Vibrio parahaemolyticus* serovar O3:K6 as cause of unusually high incidence of food-borne disease outbreaks in Taiwan from 1996 to 1999. J. Clin. Microbiol. 38: 4621-4625.
- Chowdhury, N.R., Chakraborty, S., Eampokalap, B., Chaicumpa, W., Chongsa-Nguan, M., Moolasart, P., Mitra, R., Ramamurthy, T., Bhattacharya, S.K., Nishibuchi, M., Takeda, Y. and Nair, G.B. 2000a. Clonal dissemination of *Vibrio parahaemolyticus* displaying similar DNA fingerprint but belonging to two different serovars (O3:K6 and O4:K68) in Thailand and India. Epidemiol. Infect. 125: 17-25.
- Chowdhury, N.R., Chakraborty, S., Ramamurthy, T., Nishibuchi, M., Yamasaki, S., Takeda, Y. and Nair, G.B. 2000b. Molecular evidence of clonal *Vibrio parahaemolyticus* pandemic strains. Emerg. Infect. Dis. 6: 631-636.
- Collier, D.N. 2002. Cutaneous infections from coastal and marine bacteria. Dermatol. Ther. 15: 1-9.
- Cook, D.W., Oleary, P., Hunsucker, J.C., Sloan, E.M., Bowers, J.C., Blodgett, R.J. and Depaola, A. 2002. *Vibrio vulnificus* and *Vibrio parahaemolyticus* in U.S. retail shell oysters: a national survey from June 1998 to July 1999. J. Food Prot. 65: 79-87.
- Croci, L., Suffredini, E., Cozzi, L. and Toti, L. 2001. Detection of *Vibrionaceae* in mussels and in their seawater growing area. Lett. Appl. Microbiol. 32: 57-61.

- Daniels, N.A., Ray, B., Easton, A., Marano, N., Kahn, E., McShan, A.L. 2nd, Del Rosario, L., Baldwin, T., Kingsley, M.A., Puhr, N.D., Wells, J.G. and Angulo, F.J. 2000. Emergence of a new *Vibrio parahaemolyticus* serotype in raw oysters: A prevention quandary. *JAMA*. 284: 1541-1545.
- Daniels, N.A. and Shafaie, A. 2000. A review of pathogenic *Vibrio* infections for clinicians. *Infect. Med.* 17: 665-685.
- Defoirdt, T., Crab, R., Wood, T.K., Sorgeloos, P., Verstraete, W. and Bossier, P. 2006. Quorum sensing-disrupting brominated furanones protect the gnotobiotic brine shrimp *Artemia franciscana* from pathogenic *Vibrio harveyi*, *Vibrio campbellii*, and *Vibrio parahaemolyticus* isolates. *Appl. Environ. Microbiol.* 72: 6419-6423.
- DePaola, A., Hopkins, L.H., Peeler, J.T., Wentz, B. and McPhearson, R.M. 1990. Incidence of *Vibrio parahaemolyticus* in U.S. coastal waters and oysters. *Appl. Environ. Microbiol.* 56: 2299-2302.
- DiRita, V.J. 1992. Co-ordinate expression of virulence genes by *ToxR* in *Vibrio cholerae*. *Mol. Microbiol.* 6: 451-458.
- Donovan, T.J. and van Netten, P. 1995. Culture media for the isolation and enumeration of pathogenic *Vibrio* species in foods and environmental samples. *Int. J. Food Microbiol.* 26: 77-91.
- Dumontet, S., Krovacek, K., Baloda, S.B., Grottoli, R., Pasquale, V. and Vanucci, S. 1996. Ecological relationship between *Aeromonas* and *Vibrio* spp. and planktonic copepods in the coastal marine environment in southern Italy. *Comp. Immunol. Microbiol. Infect. Dis.* 19: 245-254.

- Dziuban, E.J., Liang, J.L., Craun, G.F., Hill, V., Yu, P.A., Painter, J., Moore, M.R., Calderon, R.L., Roy, S.L. and Beach, M.J. 2006. Surveillance for waterborne disease and outbreaks associated with recreational water United States, 2003-2004. MMWR. Surveill. Summ. 55: 1-30.
- Echeverria, P., Pitarangsi, C., Eampokalap, B., Vibulbandhitkit, S., Boonthai, P. and Rowe, B. 1983. A longitudinal study of the prevalence of bacterial enteric pathogens among adults with diarrhea in Bangkok, Thailand. Diagn. Microbiol. Infect. Dis. 1: 193-204.
- Fabbri, A., Falzano, L., Frank, C., Donelli, G., Matarrese, P., Raimondi, F., Fasano, A. and Fiorentini, C. 1999. *Vibrio parahaemolyticus* thermostable direct hemolysin modulates cytoskeletal organization and calcium homeostasis in intestinal cultured cells. Infect. Immun. 67: 1139-1148.
- Farmer, J.J., Hickman-Brenner, F.W. and Kelly, M.T. 1985. *Vibrio*. In : Lennette, E.H., Balows, A., JR., Hausler , W.J. and Shadomy, H.J. (eds). Manual of Clinical Microbiology p. 282-301. 5th ed. Washington, D.C.: American Society for Microbiology.
- Feldhusen, F. 2000. The role of seafood in bacterial foodborne diseases. Microbes. Infect. 2: 1651-1660.
- Franco, P.F. and Hedreyda, C.T. 2006. Amplification and sequence analysis of the full length *toxR* gene in *Vibrio harveyi*. J. Gen. Appl. Microbiol. 52: 281-287.
- Fuenzalida, L., Hernandez, C., Toro, J., Rioseco, M.L., Romero, J. and Espejo, R.T. 2006. *Vibrio parahaemolyticus* in shellfish and clinical samples during two large epidemics of diarrhoea in southern Chile. Environ. Microbiol. 8: 675-683.
- Fujino, T., Okuno, Y., Nakada, D., Aoyama, A., Fukai, K. and Mukai, T. 1953. On the

- bacteriological examination of Shirasu food poisoning. J. Jpn. Assoc. Infect Dis. 35: 11-12.
- Gangarosa, E.J., A., S., H., S. and Feeley, T.C. 1967. Multiple serotypes of *Vibrio cholerae* from a case of cholera. lancet i. 646-648.
- Garnier, M., Labreuche, Y., Garcia, C., Robert, M. and Nicolas, J.L. 2007. Evidence for the involvement of pathogenic bacteria in summer mortalities of the pacific oyster *Crassostrea gigas*. Microb. Ecol. (electronic version).
- Geneste, C., Dab, W., Cabanes, P.A., Vaillant, V., Quilici, M.L. and Fournier, J.M. 2000. Les vibrioses non-cholériques en France: cas identifiés de 1995 à 1998 par le. Centre National de Référence. BEH. 9: 38-40.
- Ghosh, A.R. and Sehgal, S.C. 1998. Detection of *tdh* and *trh* genes in a urea-hydrolysing environmental isolate of *Vibrio parahaemolyticus* from the Andamans. J. Diarrhoeal Dis. Res. 16: 87-90.
- Gonzalez-Escalona, N., Blackstone, G.M. and DePaola, A. 2006. Characterization of a *Vibrio alginolyticus* strain, isolated from Alaskan oysters, carrying a hemolysin gene similar to the thermostable direct hemolysin-related hemolysin gene (*trh*) of *Vibrio parahaemolyticus*. Appl. Environ. Microbiol. 72: 7925-7929.
- Guvener, Z.T. and McCarter, L.L. 2003. Multiple regulators control capsular polysaccharide production in *Vibrio parahaemolyticus*. J. Bacteriol. 185: 5431-5441.
- Hagen, C.J., Sloan, E.H., Lancette, G.A., Peeler, J.T. and Sofos, J.N. 1994. Enumeration of *V. parahaemolyticus* and *V. vulnificus* in various seafoods with two enrichment broths. J. Food Protect. 57: 403-409.

- Hackney, C.R., Kleeman, E.G., Ray, B. and Speck, M.L. 1980. Adherence as a method for differentiating virulent and avirulent strains of *Vibrio parahaemolyticus*. Appl. Environ. Microbiol. 40: 652-658.
- Heath, D., Colwell, R., Derrien, A., Pillot, R., Fournier, J.M. and Pommepuy, M. 2002. Occurrence of pathogenic *vibrios* in the coastal areas of France. J. Appl. Microbiol. 92: 11-23.
- Heelan, J.S. 2001 A fatal case of *Vibrio vulnificus* infection in an alcoholic male. Clin. Microbiol. News. 23: 144-145.
- Heitmann, I., Jofre, L., Hormazabal, J.C., Olea, A., Vallebuona, C. and Valdes, C. 2005. Review and guidelines for treatment of diarrhea caused by *Vibrio parahaemolyticus*. Rev. Chilena Infectol. 22: 131-140.
- Hervio-Heath, D., Colwell, R.R., Derrien, A., Robert-Pillot, A., Fournier, J.M. and Pommepuy, M. 2002. Occurrence of pathogenic *Vibrios* in coastal area of France. J. Appl. Microbiol. 92: 1123-1135.
- Honda, S., Goto, I., Minematsu, I., Ikeda, N., Asano, N., Ishibashi, M., Kinoshita, Y., Nishibuchi, M., Ohnda, T. and Miwatani, T. 1987. *Vibrio parahaemolyticus* infectious disease caused by Kanagawa phenomenon-negative O3:K6 originated from Maldives. Kansenshogaku Zasshi. 61: 1070-1078.
- Honda, T., Abad-Lapuebla, M.A., Ni, Y.X., Yamamoto, K. and Miwatani, T. 1991. Characterization of a new thermostable direct haemolysin produced by a Kanagawa-phenomenon-negative clinical isolate of *Vibrio parahaemolyticus*. J. Gen. Microbiol. 137: 253-259.

- Honda, T. and Iida, T. 1993. The pathogenicity of *Vibrio parahaemolyticus* and the role of the thermostable direct hemolysin and related hemolysin. Rev. Med. Microbiol. 4: 106-113.
- Honda, T., Ni, Y., Miwatani, T., Adachi, T. and Kim, J. 1992. The thermostable direct hemolysin of *Vibrio parahaemolyticus* is a pore-forming toxin. Can. J. Microbiol. 38: 1175-1180.
- Honda, T., Ni, Y.X., Hata, A., Yoh, M., Miwatani, T., Okamoto, T., Goshima, K., Takakura, H., Tsunasawa, S. and Sakiyama, F. 1990. Properties of a hemolysin related to the thermostable direct hemolysin produced by a Kanagawa phenomenon negative, clinical isolate of *Vibrio parahaemolyticus*. Can. J. Microbiol. 36: 395-399.
- Honda, T., Ni, Y.X. and Miwatani, T. 1988. Purification and characterization of a hemolysin produced by a clinical isolate of Kanagawa phenomenon-negative *Vibrio parahaemolyticus* and related to the thermostable direct hemolysin. Infect. Immun. 56: 961-965.
- Hsieh, Y.C., Liang, S.M., Tsai, W.L., Chen, Y.H., Liu, T.Y. and Liang, C.M. 2003. Study of capsular polysaccharide from *Vibrio parahaemolyticus*. Infect. Immun. 71: 3329-3336.
- Huntley, J.S., Hall, A.C., Sathyamoorthy, V. and Hall, R.H. 1993. Cation flux studies of the lesion induced in human erythrocyte membranes by the thermostable direct hemolysin of *Vibrio parahaemolyticus*. Infect. Immun. 61: 4326-4332.
- Iida, T., Park, K.S., Suthienkul, O., Kozawa, J., Yamaichi, Y., Yamamoto, K. and Honda, T. 1998. Close proximity of the *tdh*, *trh* and *ure* genes on the chromosome of *Vibrio parahaemolyticus*. Microbiol. 144: 2517-2523.
- Iida, T., Suthienkul, O., Park, K.S., Tang, G.Q., Yamamoto, R.K., Ishibashi, M., Yamamoto, K. and Honda, T. 1997. Evidence for genetic linkage between the *ure* and *trh* genes in *Vibrio parahaemolyticus*. J. Med. Microbiol. 46: 639-645.

- Iida, T. and Yamamoto, K. 1990. Cloning and expression of two genes encoding highly homologous hemolysins from a Kanagawa phenomenon-positive *Vibrio parahaemolyticus* T4750 strain. *Gene.* 93: 9-15.
- Jakabal, M., Gelli, D S., Torre, J C M., Rodas, M A B., Franco, B D G M., Destro, M T. and M, L. 2003. Inactivation by ionizing radiation of *Salmonella Enteritidis*, *Salmonella Infantis*, and *Vibrio parahaemolyticus* in oysters (*Crassostrea brasiliiana*). *J. Food Protect.* 66: 1025-1029.
- Jaksic, S., Uhitil, S., Petrak, T., Bazulic, D. and Karolyi, L.G. 2002. Occurrence of *Vibrio* spp. in sea fish, shrimps and bivalve molluscs harvested from Adriatic sea. *Food Control* 13: 491-493.
- Janda, J.M., Powers, C., Bryant, R.G. and Abbott, S.L. 1988. Current perspectives on the epidemiology and pathogenesis of clinically significant *Vibrio* spp. *Clin. Microbiol. Rev.* 1: 245-267.
- Jaques, S. and McCarter, L.L. 2006. Three new regulators of swarming in *Vibrio parahaemolyticus*. *J. Bacteriol.* 188: 2625-2635.
- Johnson, D.E., Weinberg, L., Ciarkowski, J., West, P. and Colwell, R.R. 1984. Wound infection caused by Kanagawa negative *Vibrio parahaemolyticus*. *J. Clin. Microbiol.* 20: 811- 812.
- Johnson, M.D. and Brown, M.H. 2002. An investigation into the changed physiological state of *Vibrio* bacteria as a survival mechanism in response to cold temperature and studies on their sensitivity to heating and freezing. *J. Appl. Microbiol.* 92: 1066-1077.
- Joseph, S.W., Colwell, R.R. and Kaper, J.B. 1982. *Vibrio parahaemolyticus* and related halophilic *Vibrios*. *Crit. Rev. Microbiol.* 10: 77-124.

- Kaneko, T. and Colwell, R.R. 1973. Ecology of *Vibrio parahaemolyticus* in Chesapeake Bay. J. Bacteriol. 113: 24-32.
- Kaufman, G.E., Bej, A.K., Bowers, J. and DePaola, A. 2003. Oyster-to-oyster variability in levels of *Vibrio parahaemolyticus*. J. Food Prot. 66: 125-129.
- Kaysner, C.A., Abeyta, C., Jr., Stott, R.F., Lilja, J.L. and Wekell, M.M. 1990. Incidence of urea-hydrolyzing *Vibrio parahaemolyticus* in Willapa Bay, Washington. Appl. Environ. Microbiol. 56: 904-907.
- Kaysner, C.A., Abeyta, C., Jr., Trost, P.A., Wetherington, J.H., Jinneman, K.C., Hill, W.E. and Wekell, M.M. 1994. Urea hydrolysis can predict the potential pathogenicity of *Vibrio parahaemolyticus* strains isolated in the Pacific Northwest. Appl. Environ. Microbiol. 60: 3020-3022.
- Kelly, M.T. and Stroh, E.M. 1989. Urease-positive, Kanagawa-negative *Vibrio parahaemolyticus* from patients and the environment in the Pacific Northwest. J. Clin. Microbiol. 27: 2820-2822.
- Kim, T.B., Okuda, J., Matsumoto, C., Takahashi, N., Hashimoto, S. and Nishibuchi, M. 1999. Identification of *Vibrio parahaemolyticus* strains at the species level by PCR targeted to the *toxR* gene. J. Clin. Microbiol. 37: 1173-1177.
- Kimura, K., Tateiri, S. and Iida, H. 1979. Effects of pH of the medium on flagellation of *Vibrio parahaemolyticus*. Appl. Environ. Microbiol. 37: 1248-1249.
- Kishishita, M., Matsuoka, N., Kumagai, K., Yamasaki, S., Takeda, Y. and Nishibuchi, M. 1992. Sequence variation in the thermostable direct hemolysin-related hemolysin (*trh*) gene of *Vibrio parahaemolyticus*. Appl. Environ. Microbiol. 58: 2449-2457.

Kong, R.Y., Lee, S.K., Law, T.W., Law, S.H. and Wu, R.S. 2002. Rapid detection of six types of bacterial pathogens in marine waters by multiplex PCR. Water Res. 36: 2802-2812.

Laohaprertthisan, V., Chowdhury, A., Kongmuang, U., Kalnauwakul, S., Ishibashi, M., Matsumoto, C. and Nishibuchi, M. 2003. Prevalence and serodiversity of the pandemic clone among the clinical strains of *Vibrio parahaemolyticus* isolated in southern Thailand. Epidemiol. Infect. 130: 395-406.

Lee, J.H., Kim, G.T., Lee, J.Y., Jun, H.K., Yu, J.H. and Kong, I.S. 1998. Isolation and sequence analysis of metalloprotease gene from *Vibrio mimicus*. Biochim. Biophys. Acta. 1384: 1-6.

Lee, J.V. 1990. *Vibrio, Aeromonas* and *Plesiomonas* In: Parker, M.T. and Duerden, B.I.(eds.). Principles of Bacteriology, Virology and Immunology,. 8th ed. Vol II: 514-527. Philadelphia.

Lee, S.E., Shin, S.H., Kim, S.Y., Kim, Y.R., Shin, D.H., Chung, S.S., Lee, Z.H., Lee, J.Y., Jeong, K.C., Choi, S.H. and Rhee, J.H. 2000. *Vibrio vulnificus* has the transmembrane transcription activator *ToxRS* stimulating the expression of the hemolysin gene *vvhA*. J. Bacteriol. 182: 3405-3415.

Lemoine, T., Germanetto, P. and Giraud, P. 1999. Toxi-infection alimentaire collective a *Vibrio parahaemolyticus*. BEH. 10: 37-38.

Levine, W.C. and Griffin, P.M. 1993. *Vibrio* infections on the Gulf Coast: results of first year of regional surveillance. J. Infect. Dis. 167: 479-483.

Lin, Z., Kumagai, K., Baba, K., Mekalanos, J.J. and Nishibuchi, M. 1993. *Vibrio parahaemolyticus* has a homolog of the *Vibrio cholerae toxRS* operon that mediates

- environmentally induced regulation of the thermostable direct hemolysin gene. *J Bacteriol.* 175: 3844-3855.
- Lowry, P.W., McFarland, L.M., Peltier, B.H., Roberts, N.C., Bradford, H.B., Herndon, J.L., Stroup, D.F., Mathison, J.B., Blake, P.A. and Gunn, R.A. 1989. *Vibrio gastroenteritis* in Louisiana: a prospective study among attendees of a scientific congress in New Orleans. *J. Infect. Dis.* 160: 978-984.
- Matsumoto, C., Okuda, J., Ishibashi, M., Iwanaga, M., Garg, P., Rammamurthy, T., Wong, H.C., Depaola, A., Kim, Y.B., Albert, M.J. and Nishibuchi, M. 2000. Pandemic spread of an O3:K6 clone of *Vibrio parahaemolyticus* and emergence of related strains evidenced by arbitrarily primed PCR and *toxRS* sequence analyses. *J. Clin. Microbiol.* 38: 578-585.
- Maugeri, T.L., Caccamo, D. and Gugliandolo, C. 2000. Potentially pathogenic *vibrios* in brackish waters and mussels. *J. Appl. Microbiol.* 89: 261-266.
- McCarter, L., Hilmen, M. and Silverman, M. 1988. Flagellar dynamometer controls swarmer cell differentiation of *V. parahaemolyticus*. *Cell.* 54: 345-351.
- Miller, V.L., Dirita, V.J. and Mekalanos, J.J. 1989. Identification of *toxS*, a regulatory gene whose product enhances *ToxR*-mediated activation of the cholerae promotor. *J. Bacteriol.* 170: 2575-2583.
- Miller, V.L., Taylor, R.K. and Mekalanos, J.J. 1987. Cholerae toxin transcriptional activator *ToxR* is a transmembrane DNA binding protein. *Cell.* 48: 271-279.
- Ming, X., Yamamoto, K. and Honda, T. 1994. Construction and characterization of an isogenic mutant of *Vibrio parahaemolyticus* having a deletion in the thermostable direct hemolysin-related hemolysin gene (*trh*). *J. Bacteriol.* 176: 4757-4760.

- Miwatani, T. and Takeda, Y. 1976. *Vibrio parahaemolyticus* a causative bacterium of food poisoning, Tokyo:Saikou Publishing Co., LTD.
- Miyamoto, Y., Kato, T., Obara, Y., Akiyama, S., Takizawa, K. and Yamai, S. 1969. *In vitro* hemolytic characteristic of *Vibrio parahaemolyticus*: its close correlation with human pathogenicity. J. Bacteriol. 100: 1147-1149.
- Miyamoto, Y., Obara, Y., Nikkawa, T., Yamai, S., Kato, T., Yamada, Y. and Ohashi, M. 1980. Simplified purification and biophysicochemical characteristics of Kanagawa phenomenon-associated hemolysin of *Vibrio parahaemolyticus*. Infect. Immun. 28: 567-576.
- Miyasaka, J., Yahiro, S., Arahira, Y., Tokunaga, H., Katsuki, K. and Hara-Kudo, Y. 2006. Isolation of *Vibrio parahaemolyticus* and *Vibrio vulnificus* from wild aquatic birds in Japan. Epidemiol. Infect. 134: 780-785.
- Montanari, M.P., Pruzzo, C., Pane, L. and Colwell, R.R. 1999. Vibrios associated with plankton in a coastal zone of the Adriatic Sea (Italy). FEMS. Microbiol. Ecol. 29: 241-247.
- Myatt, D.C. and Davis, G.H. 1989. Isolation of medically significant Vibrio species from riverine sources in south east Queensland. Microbios. 60: 111-123.
- Nagayama, K., Oguchi, T., Arita, M. and Honda, T. 1995. Purification and characterization of a cell-associated hemagglutinin of *Vibrio parahaemolyticus*. Infect. Immun. 63: 1987-1992.
- Nair, G.B., Ramamurthy, T., Bhattacharya, S.K., Dutta, B., Takeda, Y. and Sack, D.A. 2007. Global dissemination of *Vibrio parahaemolyticus* serotype O3:K6 and its serovariants. Clin. Microbiol. Rev. 20: 39-48.

- Nishibuchi, M., Ishibashi, M., Takeda, Y. and Kaper, J.B. 1985. Detection of the thermostable direct hemolysin gene and related DNA sequences in *Vibrio parahaemolyticus* and other *vibrio* species by the DNA colony hybridization test. Infect. Immun. 49: 481-486.
- Nishibuchi, M., Doke, S., Toizumi, S., Umeda, T., Yoh, M. and Miwatani, T. 1988. Isolation from a coastal fish of *Vibrio hollisae* capable of producing a hemolysin similar to the thermostable direct hemolysin of *Vibrio parahaemolyticus*. Appl. Environ. Microbiol. 54: 2144-2146.
- Nishibuchi, M., Taniguchi, T., Misawa, T., Khaeomanee-iam, V., Honda, T. and Miwatani, T. 1989. Cloning and Nucleotide Sequence of the Gene (*trh*) Encoding the Hemolysin Related to the Thermostable Direct Hemolysin of *Vibrio parahaemolyticus*. Infect. Immun. 57: 2691-2697.
- Nishibuchi, M. and Kaper, J.B. 1990. Duplication and variation of the thermostable direct haemolysin (*tdh*) gene in *Vibrio parahaemolyticus*. Mol. Microbiol. 4: 87-99.
- Nishibuchi, M., Kumagai, K. and Kaper, J.B. 1991. Contribution of the *tdh1* gene of Kanagawa phenomenon-positive *Vibrio parahaemolyticus* to production of extracellular thermostable direct hemolysin. Microb. Pathog. 11: 453-460.
- Nishibuchi, M., Fasano, A., Russell, R.G. and Kaper, J.B. 1992. Enterotoxigenicity of *Vibrio parahaemolyticus* with and without genes encoding thermostable direct hemolysin. Infect. Immun. 60: 3539-3545.
- Nishibuchi, M. and Kaper, J.B. 1995. Thermostable direct hemolysin gene of *Vibrio parahaemolyticus*: a virulence gene acquired by a marine bacterium. Infect. Immun. 63: 2093-2099.
- Okitsu, T., Osawa, R., Pornruangwong, S. and Yamai, S. 1997. Urea hydrolysis and suppressed

- production of thermostable direct hemolysin (TDH) by *Vibrio parahaemolyticus* associated with presence of TDH-related hemolysin genes. Curr. Microbiol. 34: 314-317.
- Okuda, J., Ishibashi, M., Abbott, S.L., Janda, J.M. and Nishibuchi, M. 1997a. Analysis of the thermostable direct hemolysin (*tdh*) gene and the *tdh*-related hemolysin (*trh*) genes in urease-positive strains of *Vibrio parahaemolyticus* isolated on the West Coast of the United States. J. Clin. Microbiol. 35: 1965-1971.
- Okuda, J., Ishibashi, M., Hayakawa, E., Nishino, T., Takeda, Y., Mukhopadhyay, A.K., Garg, S., Bhattacharya, S.K., Nair, G.B. and Nishibuchi, M. 1997b. Emergence of a unique O3:K6 clone of *Vibrio parahaemolyticus* in Calcutta, India, and isolation of strains from the same clonal group from Southeast Asian travelers arriving in Japan. J. Clin. Microbiol. 35: 3150-3155.
- Olive, D.M. and Bean., P. 1999. Principle and application of methods for DNA-based typing of microbial organisms. J. Clin. Microbiol. 37: 1661-1669.
- Oliver, J.D. 1995. The viable but non-culturable state in the human pathogen *Vibrio vulnificus*. FEMS Microbiol. Lett. 133: 203-208.
- Oliver, J.D. and Kaper, J.B. 1997. *Vibrio* species. In: Doyle, M.P., Beuchat, L.R., and Montville, T.J (eds.) Food Microbiology Fundamentals-Frontiers. P.228-264. Washington D.C.: ASM Press.
- Omori, G., Iwao, M., Iida, S. and Kuroda, K. 1966. Studies on K antigen of *Vibrio parahaemolyticus*. I. Isolation and purification of K antigen from *Vibrio parahaemolyticus* A55 and some of its biological properties. Biken J. 9: 33-43.
- Osawa, R., Okitsu, T., Morozumi, H. and Yamai, S. 1996. Occurrence of urease-positive *Vibrio parahaemolyticus* in Kanagawa, Japan, with specific reference to presence of

- thermostable direct hemolysin (TDH) and the TDH-related-hemolysin genes. *Appl. Environ. Microbiol.* 62: 725-727.
- Osawa, R. and Yamai, S. 1996. Production of thermostable direct hemolysin by *Vibrio parahaemolyticus* enhanced by conjugated bile acids. *Appl. Environ. Microbiol.* 62: 3023-3025.
- Osorio, C.R. and Klose, K.E. 2000. A region of the transmembrane regulatory protein *ToxR* that links the transcription activation domain to the cytoplasmic membrane displays wide divergence among *Vibrio* species. *J. Bacteriol.* 182: 526-528.
- Pan, T.M., Wang, T.K., Lee, C.L., Chien, S.W. and Horng, C.B. 1997. Food-borne disease outbreaks due to bacteria in Taiwan, 1986 to 1995. *J. Clin. Microbiol.* 35: 1260-1262.
- Paparella, M.W. 1984. Sanitary precautions for the seafood packer in preventing disease caused by *Vibrio* species. In: Colwell, R.R. (ed). *Vibrios in the environment.*, New York: John Wiley and Sons.
- Park, K.S., Arita, M., Iida, T. and Honda, T. 2005. *vpaH*, a gene encoding a novel histone-like nucleoid structure-like protein that was possibly horizontally acquired, regulates the biogenesis of lateral flagella in *trh*-positive *Vibrio parahaemolyticus* TH3996. *Infect. Immun.* 73: 5754-5761.
- Poda, G. 1997. Vibrio 97-117. In Metodi microbiologici per lo studio delle matrici alimentari Dossier del Centro di documentazione per la salute della Regione Emilia-Romagna.
- Presepi, D., Serratore, P., Milandri, S., Viviani, R. and Paesanti, F. 1997 Valutazione del processo di decontaminazione microbiologica in molluschi bivalvi tabulati in acque marine idonee. *L'Igiene Moderna* 107: 311-326.

- Rahman, M., Bhuiyan, N.A., Kuhn, I., Ramamurthy, T., Rahman, M., Mollby, R. and Nair, G.B. 2006. Biochemical fingerprinting of *Vibrio parahaemolyticus* by the PhenePlate system: comparison between pandemic and non-pandemic serotypes. *Epidemiol. Infect.* 134: 985-989.
- Raimondi, F., Kao, J.P., Fiorentini, C., Fabbri, A., Donelli, G., Gasparini, N., Rubino, A. and Fasano, A. 2000. Enterotoxicity and cytotoxicity of *Vibrio parahaemolyticus* thermostable direct hemolysin in *in vitro* systems. *Infect. Immun.* 68: 3180-3185.
- Raimondi, F., Kao, J.P., Kaper, J.B., Guandalini, S. and Fasano, A. 1995. Calcium-dependent intestinal chloride secretion by *Vibrio parahaemolyticus* thermostable direct hemolysin in a rabbit model. *Gastroenterol.* 109: 381-386.
- Reich, K.A. and Schoolnik, G.K. 1994. The light organ symbiont *Vibrio fisheri* posses a homolog of the *Vibrio cholerae* transmembrane transcriptional activator *ToxR*. *J. Bacteriol.* 176: 3085-3088.
- Richards, G.P. 1998. Microbial purification of shellfish: a review of depuration and relaying. *J. Food Protect.* 51: 218-251.
- Rigby, P.W.J., Dieckmann, M., Rhodes, C. and Berg, P. 1977. Labelling deoxyribonucleic acid to high specific activity *in vitro* by nick translation with DNA polymerase I. *J. Molec. Biol.* 113: 237-251.
- Ripabelli, G., Grasso, G.M., Sammarco, M.L., Luzzi, I. and 1997. Procedure di isolamento e caratterizzazione di *Vibrio* spp. di importanza clinica. *Rapporto ISTISAN* 31: 1-50
- Sack, R.B. and Miller, L.E. 1969. Progressive Changes of *Vibrio* Serotypes in Germ-free mice infected with *Vibrio cholerae* O1. *J. Bacteriol.* 99: 688-695.

- Sakazaki, R. 1968. Proposal of *Vibrio alginolyticus* for the biotype 2 of *Vibrio parahaemolyticus*. Jpn. J. Med. Sci. Biol. 21: 359-362.
- Sakazaki, R. and Balows, A. 1981. "A. The genera *Vibrio* *Plesiomonas* and *Aeromonas*" The Prokaryotes A-Handbook on Habitats, Isolation and Identification of bacteria, I ed., Springer-Verlag, New York.
- Sakazaki, R., Iwanami, S. and Fukumi, H. 1963. Studies on the enteropathogenic, facultatively halophilic bacteria, *Vibrio Parahaemolyticus*. I. morphological, cultural and biochemical properties and its taxonomical position. Jpn. J. Med. Sci. Biol. 16: 161-188.
- Sakazaki, R., Tamura, K., Nakamura, A., Kurata, T. and Goda, A. 1974. Studies on enteropathogenic activity of *Vibrio parahaemolyticus* using ligated gut loop model in rabbits. Jpn. J. Med. Sci. Biol. 27: 35-43.
- Sakurai, J., Honda, T., Jinguji, Y., Arita, M. and Miwatani, T. 1976. Cytotoxic effect of the thermostable direct hemolysin produced by *Vibrio parahaemolyticus* on FL cells. Infect. Immun. 13: 876-883.
- Serratore, P., Turtura, G.C., Rinaldini, E., Milandri, S. and Presepi, D. 1999. Phenotypic characterization of some bacterial populations belonging to the genus *Vibrio*. Annali di Microbiologia ed Enzimologia. 48: 89-99.
- Sheehy, T.W., Sprintz., H., Augerson., W.S. and Formal., S.B. 1966. Laboratory *Vibro cholerae* infection in the United State. J. Am. Med. Assoc. 197: 321-325.
- Shinoda, S., Honda, T., Takeda, Y. and Miwatani, T. 1974. Antigenic difference between polar monotrichous and peritrichous flagella of *Vibrio parahaemolyticus*. J. Bacteriol. 120: 923-928.

- Shinoda, S., Kariyama, R., Ogawa, M., Takeda, Y. and Miwatani, T. 1976. Flagellar antigens of various species of the genus *Vibrio* and related genera. Int. J. Syst. Bacteriol. 26: 97-101.
- Shirai, H., Ito, H., Hirayama, T., Nakamoto, Y., Nakabayashi, N., Kumagai, K., Takeda, Y. and Nishibuchi, M. 1990. Molecular epidemiologic evidence for association of thermostable direct hemolysin (TDH) and TDH-related hemolysin of *Vibrio parahaemolyticus* with gastroenteritis. Infect. Immun. 58: 3568-3573.
- Stabili, L., Rizzi, C., Vozza, T., Pastore, M. and Cavallo, R.A. 2000. Occurrence of *vibrios* in the southern Adriatic sea Italian coasts. Vie et Milieu - Life and Environment 50: 93-100.
- Strom, M.S. and Paranjpye, R.N. 2000. Epidemiology and pathogenesis of *Vibrio vulnificus* Microbes Infect. 2: 177-188.
- Supuwat, K. and Huttayananont, S. 1997. Serotype conversion of *Vibrio cholerae* isolates during 1980-1996, Bull. Dept. Med. Science (Thailand).
- Suthienkul, O., Ishibashi, M., Iida, T., Nettip, N., Supavej, S., Eampokalap, B., Makino, M. and Honda, T. 1995. Urease production correlates with possession of the *trh* gene in *Vibrio parahaemolyticus* strains isolated in Thailand. J. Infect. Dis. 172: 1405-1408.
- Tacket, C.O., Brenner, F. and Blake, P.A. 1984. Clinical features and an epidemiological study of *Vibrio vulnificus* infections. J. Infect. Dis. 149: 558-561.
- Tada, J., Ohashi, T., Nishimura, N., Shirasaki, Y., Ozaki, H., Fugushima, S., Takano, J., Nishibushi, M. and Takada, F. 1992. Detection of the thermostable direct hemolysin gene (*tdh*) and the thermostable direct hemolysin-related hemolysin gene (*trh*) of *Vibrio parahaemolyticus* by polymerase chain reaction. Mol. Cell Probes. 6:477-487.

- Takahashi, A., Sato, Y., Shiomi, Y., Cantarelli, V.V., Iida, T., Lee, M. and Honda, T. 2000. Mechanisms of chloride secretion induced by thermostable direct haemolysin of *Vibrio parahaemolyticus* in human colonic tissue and a human intestinal epithelial cell line. J. Med. Microbiol. 49: 801-810.
- Takahashi, A., Yamamoto, C., Kodama, T., Yamashita, K., Harada, N., Nakano, M., Honda, T. and Nakaya, Y. 2006. Pore formation of thermostable direct hemolysin secreted from *Vibrio parahaemolyticus* in lipid bilayers. Int. J. Toxicol. 25: 409-418.
- Takeda, Y. 1988. Thermostable direct hemolysin of *Vibrio parahaemolyticus*. Methods Enzymol. 165: 189-193.
- Takeda, Y., Takeda, T., Honda, T. and Miwatani, T. 1976. Inactivation of the biological activities of the thermostable direct hemolysin of *Vibrio parahaemolyticus* by ganglioside Gt1. Infect. Immun. 14: 1-5.
- Takeda, Y., Takeda, T., Honda, T. and Miwatani, T. 1978. Comparison of bacterial cardiotoxins: thermostable direct hemolysin from *Vibrio parahaemolyticus*, streptolysin O and hemolysin from *Listeria monocytogenes*. Biken J. 21: 1-8.
- Tang, G.Q., Iida, T., Yamamoto, K. and Honda, T. 1994. A mutant toxin of *Vibrio parahaemolyticus* thermostable direct hemolysin which has lost hemolytic activity but retains ability to bind to erythrocytes. Infect. Immun. 62: 3299-3304.
- Tanil, G.B., Radu, S., Nishibuchi, M., Rahim, R.A., Napis, S., Maurice, L. and Gunsalam, J.W. 2005. Characterization of *Vibrio parahaemolyticus* isolated from coastal seawater in peninsular Malaysia. Southeast Asian J. Trop. Med. Public Health 36: 940-945.

- Tantillo, G.M., Fontanarosa, M., Pinto, A.D. and Musti, M. 2004. Updated perspectives on emerging *vibrios* associated with human infections. Letters Appl. Microbiol. 39: 117-126.
- Tarr, C.L., Patel, J.S., Puhr, N.D., Sowers, E.G., Bopp, C.A. and Strockbine, N.A. 2007. Identification of *Vibrio* isolates by a multiplex PCR assay and *rpoB* sequence determination. J. Clin. Microbiol. 45: 134-140.
- Terai, A., Baba, K., Shirai, H., Yoshida, O., Takeda, Y. and Nishibuchi, M. 1991. Evidence for insertion sequence-mediated spread of the thermostable direct hemolysin gene among *Vibrio* species. J. Bacteriol. 173: 5036-5046.
- Vanderzant, C. and Nickelson, R. 1972. Survival of *Vibrio parahaemolyticus* in shrimp tissue under various environmental conditions. Appl. Microbiol. 23: 34-37.
- Vasudevan, P., Marek, P., Daigle, S., Hoagland, T. and Venkitanarayanan, KS. 2002. Effect of chilling on survival of *Vibrio parahaemolyticus* on fish fillets. J. Food Safety. 22: 209-217.
- Versalovic, J., Koeuth, T. and Lupski, J.R. 1991. Distribution of repetitive DNA sequences in eubacteria and application to fingerprinting of bacterial genomes. Nucleic Acids Res. 19: 6823-6831.
- Vuddhakul, V., Chowdhury, A., Laohaprertthisan, V., Pungrasamee, P., Patrarungpong, N., Thianmontri, P., Ishibashi, M., Matsumoto, C. and Nishibuchi, M. 2000a. Isolation of a pandemic O3:K6 clone of a *Vibrio parahaemolyticus* strain from environmental and clinical sources in Thailand. Appl. Environ. Microbiol. 66: 2685-2689.
- Vuddhakul, V., Nakai, T., Matsumoto, C., Oh, T., Nishino, T., Chen, C.H., Nishibuchi, M. and Okuda, J. 2000b. Analysis of *gyrB* and *toxR* gene sequences of *Vibrio hollisae* and

- development of *gyrB*- and *toxR*-targeted PCR methods for isolation of *V. hollisae* from the environment and its identification. *Appl. Environ. Microbiol.* 66: 3506-3514.
- West, A. 1989. The human pathogenic *vibrios* - a public health update with environmental perspectives. *Epidemiol. Infect.* 103: 1-33.
- William, J.G.K., Kubelik, A.R., Livak, K.J., Rafalski, J.A. and Tingey, S.V. 1990. DNA polymorphisms amplified by arbitrary primers are useful as genetic markers. *Nucleic Acids Res.* 18: 6531-6535.
- Wong, H.C., Chen, L.L. and Yu, C.M. 1994. Survival of psychrotrophic *Vibrio mimicus*, *Vibrio fluialis* and *Vibrio parahaemolyticus* in culture broth at low temperatures. *J. Food Protect.* 57: 607-610.
- Wong, H.C., Liu, C.C., Yu, C.M. and Lee, Y.S. 1996a. Utilization of iron sources and its possible roles in the pathogenesis of *Vibrio parahaemolyticus*. *Microbiol. Immunol.* 40: 791-798.
- Wong, H.C., Lu, K.T., Pan, T.M., Lee, C.L. and Shih, D.Y. 1996b. Subspecies typing of *Vibrio parahaemolyticus* by pulsed-field gel electrophoresis. *J. Clin. Microbiol.* 34: 1535-1539.
- Wong, H.C., Chen, M.C., Liu, S.H. and Liu, D.P. 1999. Incidence of highly genetically diversified *Vibrio parahaemolyticus* in seafood imported from Asian countries. *Int. J. Food Microbiol.* 52: 181-188.
- Wong, H.C., Liu, S.H., Wang, T.K., Lee, C.L., Chiou, C.S., Liu, D.P., Nishibuchi, M. and Lee, B.K. 2000. Characteristics of *Vibrio parahaemolyticus* O3:K6 from Asia. *Appl. Environ. Microbiol.* 66: 3981-3986.

- Wong, H.C. and Wang, P. 2004. Induction of viable but nonculturable state in *Vibrio parahaemolyticus* and its susceptibility to environmental stresses. J. Appl. Microbiol. 96: 359-366.
- Xu, C., Ren, H., Wang, S. and Peng, X. 2004. Proteomic analysis of salt-sensitive outer membrane proteins of *Vibrio parahaemolyticus*. Res. Microbiol. 155: 835-842.
- Xu, M., Iida, T., Yamamoto, K., Takarada, Y., Miwatani, T. and Honda, T. 1994. Demonstration and characterization of simultaneous production of a thermostable direct hemolysin (TDH/I) and a TDH-related hemolysin (TRHx) by a clinically isolated *Vibrio parahaemolyticus* strain, TH3766. Infect. Immun. 62: 166-171.
- Yabuuchi, E., Miwatani, T., Takeda, Y. and Arita, M. 1974. Flagellar morphology of *Vibrio parahaemolyticus* (Fujino *et al*) Sakazaki, Iwanami and Fukumi 1963. Jpn. J. Microbiol. 18: 295-305.
- Yam, W.C., Chan, C.Y., Ho Bella, S.W., Tam, T.Y., Kueh, C. and Lee, T. 1999. Abundance of clinical enteric bacterial pathogens in coastal waters and shellfish. Water Res. 34: 51-56.
- Yamasaki, S., Shirai, H., Takeda, Y. and Nishibuchi, M. 1991. Analysis of the gene of *Vibrio hollisae* encoding the hemolysin similar to the thermostable direct hemolysin of *Vibrio parahaemolyticus*. FEMS Microbiol. Lett. 64: 259-263.
- Yoh, M., Honda, T., Miwatani, T. and Nishibuchi, M. 1991. Characterization of thermostable direct hemolysins encoded by four representative *tdh* genes of *Vibrio parahaemolyticus*. Microb. Pathog. 10: 165-172.