

เอกสารอ้างอิง

- เมธี วัฒนสิงห์. 2543. การเลี้ยงกุ้งแชบ๊วยแบบพัฒนา ภูมิปัญญาคนไทย ตลาดในและนอกยังเปิดกว้าง. วารสารสัตว์น้ำ 11(131), 5-16
- สุพจน์ จิ่งแย้มปิ่น และชัยรัตน์ พุ่มช่วย. 2543. ผลงานขึ้นโบแดงสถานีเพาะเลี้ยงสัตว์น้ำชายฝั่ง จังหวัดตรังเลี้ยงพ่อแม่แชบ๊วยในบ่อดินล่ำเร็ว. วารสารสัตว์น้ำ 11(132), 37-44.
- วิไลพร ธรรมรัตน์. 2551. การศึกษาเอนไซม์ฟีนอลออกซิเดสในกุ้งแชบ๊วย. วิทยานิพนธ์ วิทยาศาสตร์ มหาวิทยาลัยสงขลานครินทร์
- Adachi, K., Hirata, T., Nagai, K. and Sakaguchi, M. 2001. Hemocyanin a most likely inducer of black spots in kuruma prawn *Penaeus japonicus* during storage. J. Food Sci. 66, 1130-1136.
- Ashida, M., Ishizaki, Y. and Iwahana, H. 1983. Activation of prophenoloxidase by bacterial cell walls or β -1,3-glucans in plasma of the silkworm, *Bombyx mori*. Biochem. Biophys. Res. Commun. 113, 562-568.
- Ashida, M. and Brey, P.T. 1997. Recent advances in research on the insect prophenoloxidase cascade. In: Brey, P.T. and Hultmark, D. editors. Molecular Mechanism of Immune Responses in Insects. London, Chapman and Hall, p 135-172.
- Aspan, A., Huang, T., Cerenius, L. and Söderhäll, K. 1995. cDNA cloning of prophenoloxidase from the freshwater crayfish *Pacifastacus leniusculus* and its activation. Proc. Natl. Acad. Sci. USA. 92(4), 939-943.
- Auttarat, J., Phiriyangkul, P. and Utarabhand, P. 2006. Characterization of vitellin from the ovaries of the banana shrimp *Litopenaeus merguensis*. Comp. Biochem. Physiol. B 143, 27-236.
- 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.
- Brouwer, M., Bonaventura, C. and Bonaventura, J. 1978. Analysis of the effect of three different allosteric ligands on oxygen binding by hemocyanin of the shrimp, *Penaeus setiferus*. Biochemistry 17, 2148-2154.
- Cariolou, M.A. and Flytzanis, C.N. 1993. Sex-specific gene expression in distinct tissues of the shrimp *Penaeus vannamei*. Comp. Biochem. Physiol. 106B, 705-716.

- Chen, J.-C. and Cheng, S.-Y. 1993. Studies on haemocyanin and haemolymph protein levels of *Penaeus japonicus* based on sex, size and moulting cycle. *Comp. Biochem. Physiol.* 106B, 293-296.
- Chen, H.Y., Ho, S.H., Chen, T.I., Soong, K., Chen, I.M. and Cheng, J.H. 2007. Identification of a female-specific hemocyanin in the mud crab, *Scylla olivacea* (Crustacea: Portunidae). *Zoology* 46(2), 194-202.
- Davis, B.J. 1964. Disc electrophoresis: II. Method and application to human serum protein. *Ann. N.Y. Acad. Sci.* 121, 404-427.
- Destoumieux-Garzon, D., Saulnier, D., Garnier, J., Jouffrey, C., Bulet, P. and Bachere, E. 2001. Crustacean Immunity. Antifungal peptides are generated from the C terminus of shrimp hemocyanin in response to microbial challenge. *J. Biol. Chem.* 276, 47070-47077.
- Duvic, B. and Söderhäll, K. 1990. Purification and characterization of β -1,3-glucan binding protein from the plasma of the crayfish *Pacifastacus leniusculus*. *J. Biol. Chem.* 265, 9332-9337.
- Ellerton, H.D., Anderson, D.M. 1981. In: Lang, J., editor. *Invertebrate Oxygen Binding Protein: Structure, Active Site and Function*. New York, Marcel Dekker, 159-170.
- Fan, T., Zhang, Y., Yang, L., Yang, X., Jiang, G., Yu, M. and Cong, R. 2009. Identification and characterization of a hemocyanin-derived phenol-oxidase from the crab *Charybdis japonica*. *Comp. Biochem. Physiol.* 152B, 144-149.
- Figueroa-Soto, C.G., Calderon, A.M., Vazquez-Moreno, L., Higuera-Ciapara, I. and Yepiz-Plascencia, G. 1997. Purification of hemocyanin from white shrimp (*Penaeus vannamei* Boone) by immobilized metal affinity chromatography-synthesis by fat body and occurrence in hemolymph. *Comp. Biochem. Physiol.* 117B, 203-208.
- Hernandez-Lopez, J., Gollas-Galvin, T. and Vargas-Albores, F. 1996. Activation of the prophenoloxidase system of the brown shrimp (*Penaeus californiensis* Holmes). *Comp. Biochem. Physiol.* 113C, 61-66.
- Jaenicke, E., Föll, R. and Decker, H. 1999. Spider hemocyanin binds ecodyson and 20-OH-ecodyson. *J. Biol. Chem.* 274, 34267-34271.
- Kawabata, T., Yasuhara, Y., Ochiai, M., Matsuura, S. and Ashida, M. 1995. Molecular cloning of insect pro-phenol oxidase: A copper-containing protein homologous to arthropod hemocyanin. *Proc. Natl. Acad. Sci. USA.* 92(17), 7774-7778.

- Laemmli, U.K. 1970. Cleavage of structure protein during assembly of head of bacteriophage T4. *Nature* 227, 680-685.
- Lee, S.Y., Lee, B.L. and Söderhäll, K. 2004. Processing of crayfish hemocyanin subunits into phenoloxidase. *Biochem. Biophys. Res. Commun.* 322, 490-496.
- Lei, K., Li, F., Zhang, M.C., Yang, H., Luo, T. and Xu, X. 2007. Difference between hemocyanin subunits from shrimp *Penaeus japonicus* in anti-WSSV defense. *Dev. Comp. Immunology* 32, 808-813.
- Paul, R.J. and Pirow, R. 1998. The physiological significance of respiratory proteins in invertebrates. *Zoology* 100, 319-327.
- Rainer, J. and Brouwer, M. 1993. Hemocyanin synthesis in Blue Crab *Callinectes sapidus*. *Comp. Biochem. Physiol.* 104B, 69-73.
- Rittidach, W. 2006. Characterization of sialic acid-specific lectin in the hemolymph of banana shrimp (*Penaeus merguensis*). Ph.D. Thesis in Biochemistry, Prince of Songkla University.
- Söderhäll, K. and Cerenius, L. 1992. Crustacean immunity. *Annu. Rev. Fish Dis.* 2, 3-23.
- Söderhäll, K., Cerenius, L. and Johansson, M.W. 1996. The prophenoloxidase activating system in invertebrates. In: Söderhäll, K., Iwanaga, S. and Vasata, G.R. editors. *New Directions in Invertebrates Immunology*. Fair Heaven, New Jersey, SOS Publications. p 229-254.
- Söderhäll, K. and Cerenius, L. 1998. Role of the prophenoloxidase activating system in invertebrate immunity. *Curr. Opin. Immunol.* 10, 23 – 28.
- Sellos, D., Lemoine, S. and Van Wormhoudt, A. 1997. Molecular cloning of hemocyanin cDNA from *Penaeus vannamei* (Crustacea, Decapoda): structure, evolution and physiological aspects. *FEBS Letters* 407, 153-158.
- Spindler, K.D., Hennecke, R. and Gellissen, G. 1992. Protein production and the molting cycle in the crayfish *Astacus leptodactylus* (Nordmann, 1842): II. Hemocyanin and protein synthesis in the midgut gland. *Gen. Comp. Endocrinol.* 85, 248-253.
- Sritunyalucksana, K., Wongsuebsantati, K., Johansson, MW. and Söderhäll, K. 2001. Peroxinectin, a cell adhesive protein associated with the proPO system from the black tiger shrimp, *Penaeus monodon*. *Dev. Comp. Immunol.* 25, 353-356.

- Sugumaran, M. 1996. Role of the insect cuticle in host defense reaction. In: Söderhäll, K., Iwanaga, S. and Vasata, G.R. editors. *New Directions in Invertebrates Immunology*. Fair Heaven, New Jersey, SOS Publications. p 355-374.
- Utarabhand, P., Rittidach, W. and Paijit, N. 2007. Bacterial agglutination by sialic acid-specific lectin in the hemolymph of the banana shrimp, *Penaeus (Fenneropenaeus) merguensis*. *Science Asia* 33, 41-46.
- Van Holde, K.E. and Miller, K.I. 1995. Hemocyanins. In: Anfinsen, C.B., Edsall, J.T., Eisenberg, D.S. and Richards, F.M. editors. *Advances in Protein Chemistry*. New York, Academic Press Inc. Vol. 47, 1-81.
- Vargas-Albores, F., Guzman-Murillo, M.A. and Ochoa, J-L. 1993. An anticoagulant solution for hemolymph collection and prophenoloxidase studies of Penaeid shrimp (*Penaeus californiensis*). *Comp. Biochem. Physiol.* 106A, 299-303.
- Vargas-Albores, F., Jimenez-Vega, F. and Söderhäll, K. 1996. A plasma protein isolated from brown shrimp (*Penaeus californiensis*) which enhances the activation of prophenoloxidase system by β -1,3-glucan. *Dev. Comp. Immunol.* 5, 299-306.
- Wallace, R.A. 1965. Resolution and isolation of avian and amphibian yolk granule protein using TEAE-cellulose. *Anal. Biochem.* 11, 297-311.
- Zhang, X., Huang, C. and Qin, Q. 2004. Antiviral properties of hemocyanin isolated from shrimp *Penaeus monodon*. *Antiviral Research* 61, 93-99.



