

REFERENCES

- Abdel-Rahman, M.A., Tashiro, Y. and Sonomoto, K. (2011). Lactic acid production from lignocellulose-derived sugars using lactic acid bacteria: Overview and limits. *J. Biotechnol.* 156: 286-301.
- Abdel-Rahman, M.A., Tashiro, Y. and Sonomoto, K. (2013). Recent advances in lactic acid production by microbial fermentation processes. *Biotechnol. Adv.* 31: 877-902.
- Adam, W., Polak-Berecka, M. and Targonski, Z. (2010). A new protein of α -amylase activity from *Lactococcus lactis*. *J. Microbiol. Biotechnol.* 20: 1307-1313.
- Aguilar, G., Morlon-Guyot, J., Trejo-Aguilar, G. and Guyot J.P. (2000). Purification and characterization of an extracellular α -amylase produced by *Lactobacillus manihotivorans* LMG 18010T, an amylolytic lactic acid bacterium. *Enzyme Microb. Technol.* 27: 406-413.
- Al-Quadani, F., Akel, H. and Natshi, R. (2011). Characteristics of a novel, highly acid- and thermo-stable amylase from thermophilic *Bacillus* strain HUTBS62 under different environmental conditions. *Ann. Microbiol.* 61: 887-892.
- Andersson, U. and Radstrom, P. (2002). β -Glucose 1-phosphate-interconverting enzymes in maltose- and trehalose-fermenting lactic acid bacteria. *Environ. Microbiol.* 4: 81-88.
- Anuradha, R., Suresh, A. K. and Venkatesh, K. V. (1999). Simultaneous saccharification and fermentation of starch to lactic acid. *Process Biochem.* 35: 367-375.
- Axelsson, L. (2004). Lactic acid bacteria: classification and physiology. In Lactic acid bacteria: Microbiology and Functional Aspect eds. Salminen, S., von Wright, A., Ouwehand, A. Marcel pp. 1-66. Dekker, Inc., New York.

- Bertoldo, C. and Antranikian, G. (2002). Starch-hydrolyzing enzymes from thermophilic archaea and bacteria. *Curr. Opin. Chem. Biol.* 6: 151-160.
- Bijttebier, A., Goesart, H. and Delcour, J.A. (2008). Amylase action pattern on starch polymers. *Biologia.* 63: 989-999.
- Bomrungnok, W., Sonomoto, K., Pinitglang, S. and Wongwicharn, A. (2012). Single step lactic acid production from cassava starch by *Lactobacillus plantarum* SW14 in conventional continuous and continuous with high cell density. *APCBEE Procedia*: 2: 97-103.
- Britton, H.T.K. and Robinson, R.A. (1931). Universal buffer solution and the dissociation constant of veronal. *J. Chem. Soc.* 10: 1456-1462.
- Brown, T.A. Gene cloning and DNA analysis. Wiley-Blackwell, 2010.
- Buleon, A., Colonna, P., Planchot, V. and Ball, S. (1998). Starch granules: structure and biosynthesis. *Int. J. Biol. Macromol.* 23: 85-112.
- Burgess-Cassler, A. and Imam, S. (1991). Partial purification and comparative characterization of α -amylase secreted by *Lactobacillus amylovorus*. *Curr. Microbiol.* 23: 207-213.
- Calderon Santoyo, M., Loiseau, G., Rodriguez Sanoja, R. and Guyot, J.P. (2003). Study of starch fermentation at low pH by *Lactobacillus fermentum* Ogi E1 reveals uncoupling between growth and α -amylase production at pH 4.0. *Int. J. Food Microbiol.* 80: 77-87.
- Chakkuruang, S. Low cost medium for lactic acid production from starch by *Lactobacillus plantarum* S21. Thesis for Master of Science, Chiang Mai University, 2011.
- Chaplin, M.F. and Bucke, C. (1990). Enzyme technology. Press Syndicate of the University of Cambridge, New York

- Chatterjee, M., Chakrabarty, S.L., Chattopadhyay, B.D. and Mandal, R.K. (1997). Production of lactic acid by direct fermentation of starchy wastes by an amylase-producing *Lactobacillus*. *Biotechnol. Lett.* 19: 873-874.
- Chen, R. (2012). Bacterial expression systems for recombinant protein production: *E. coli* and beyond. *Biotechnol. Adv.* 30: 1102-1107.
- Crabb, W.D. and Mitchinson, C. (1997). Enzymes involved in the processing of starch to sugars. *TIBTECH.* 15: 349-352.
- Datta, R., Tsai, S.P., Bonsinore, P., Moon, S.H. and Frank, J.R. (1995). Technological and economic potential of poly(lactic acid) and lactic acid derivatives. *FEMS Microbiol. Rev.* 16: 221-231.
- Demain, A.L. and Vaishnav, P. (2009). Production of recombinant proteins by microbes and higher organisms. *Biotechnol. Adv.* 27: 297-306.
- Diderichsen, B. and Christiansen, L. (1988). Cloning of a maltogenic alpha-amylase from *Bacillus stearothermophilus*. *FEMS Microbiol. Lett.* 56: 53-60.
- Diep, D.B., Mathiesen, G., Eijsink, V.G.H. and Nes, I.F. (2009). Use of lactobacilli and their pheromone-based regulatory mechanism in gene expression and drug delivery. *Curr. Pharm. Biotechnol.* 10: 62-73.
- Dobois, M., Gilles, K.A., Hamilton, J.K., Rebers, P.A. and Smith, F. (1956). Colorimetric method for determination of sugar and related substances. *Anal. Chem.* 28: 350-356.
- Eisen, J.A. (1995). The recA protein as a model molecule for molecular systematic studies of bacteria: comparison of trees of recAs and 16S rRNAs from the same species. *J. Mol. Evol.* 41: 1105-1123.
- Enache, M., Popescu, G., Dumitru, L. and Kamekura, M. (2009). The effect of $\text{Na}^+/\text{Mg}^{2+}$ ratio on the amylase activity of haloarchaea isolated from Techirghiol lake, Romania, a low salt environment. *Proc. Rom. Acad., Series B:* 3-7.

- Eom, H.J., Moon, J.S., Seo, E.Y. and Han, N.S. (2009). Heterologous expression and secretion of *Lactobacillus amylovorus* α -amylase in *Leuconostoc citreum*. *Biotechnol. Lett.* 31: 1783-1788.
- Fitzsimons, A., Hols, P., Leer, R.J., O'connell, M. and Delcour, J. (1994). Development of an amylolytic *Lactobacillus plantarum* silage strain expressing the *Lactobacillus amylovorus* α -amylase gene. *Appl. Environ. Microbiol.* 60: 3529-3535.
- Florencio, J., Eiras-Stofella, D., Soccol, C.R., Raimbault, M., Guyot, P. and Fontana, J.D. (2000). *Lactobacillus plantarum* amylase acting on crude starch granules. *Appl. Biochem. Biotechnol.* 84-86: 721-730.
- Freer, S.N. (1993). Purification and characterization of the extracellular α -amylase from *Streptococcus bovis* JB1. *Appl. Environ. Microbiol.* 59: 1398-1402.
- Friedberg, F. and Rhodes, C. (1986). Cloning and characterization of the beta-amylase gene from *Bacillus polymyxa*. *J. Bacteriol.* 165: 819-824.
- Giraud, E., Gosselin, L., Marin, B., Parada, J.L. and Raimbault, M. (1993). Purification and characterization of an extracellular amylase from *Lactobacillus plantarum* strain A6. *J. Appl. Bacteriol.* 75: 276-282.
- Giraud, E., Champaviller, A. and Raimbault, M. (1994). Degradation of raw starch by a wild amylolytic strain of *Lactobacillus plantarum*. *Appl. Environ. Microbiol.* 60: 4319-4323.
- Gupta, R., Gigras, P., Mohapatra, H., Goswami, V.K., Chauhan, B. (2003). Microbial α -amylases: a biotechnological perspective. *Process Biochem.* 38: 1599-1616.
- Hofvendahl, K., Akerberg, C., Zacchi, G. and Hahn-Hagerdal, B. (1999). Simultaneous enzymatic wheat starch saccharification and fermentation to lactic acid by *Lactococcus lactis*. *Appl. Microbiol. Biotechnol.* 52: 163-169.

- Hofvendahl, K. and Hahn-Hagerdal, B. (2000). Factor affecting the fermentative lactic acid production from renewable resources. *Enzyme Microb. Technol.* 26: 87-107.
- Holten, C.H., Muller, A. and Rehbinder, D. (1971) Lactic acid: properties and chemistry of lactic acid and derivatives. Verlag Chemie, Germany.
- John, R.P., Nampoothiri, K.M. and Pandey, A. (2006). Simultaneous saccharification and fermentation of cassava bagasse for L-(+)-lactic acid production using *Lactobacilli*. *Appl. Biochem. Biotechnol.* 134: 263-272.
- John, R.P., Anisha, G.S., Nampoothiri, K.M. and Pandey, A. (2009). Direct lactic acid fermentation: Focus on simultaneous saccharification and lactic acid production. *Biotechnol Adv* 27, 145-152.
- Keatkrai, J. and Jirapakkul, W. (2010). Volatile profile of khanom jeen, Thai fermented rice noodles, and the changes during the fermentation process. *J. Soc. Sci. Thailand.* 36: 46-51.
- Kim, J.H., Sunako, M., Ono, H., Murooka, Y, Fukusaki, E. and Yamashita, M. (2008). Characterization of gene encoding amylopullulanase from plant-originated lactic acid bacterium, *Lactobacillus plantarum* L137. *J. Biosci. Bioeng.* 106: 449-459.
- Kim, J.H., Sunako, M., Ono, H., Murooka, Y., Fukusaki, E. and Yamashita, M. (2009). Characterization of the C-terminal truncated form of amylopullulanase from *Lactobacillus plantarum* L137. *J. Biosci. Bioeng.* 107: 124-129.
- Kjeldahl, J. (1883). New Method for the Determination of Nitrogen. *Chem. News.* 48: 101-102.
- Kleerebezem, M., Boekhorst, J., van Kranenburg, R., Molenaar, D., Kuipers, O.P., Leer, R., Tarchin, R., Peter, S.A., Sandbrink, H.M., Fiers, M.W.E.J., Stiekema, W., Lankhorst, R.M.K., Bron, P.A., Hoffer, S.M., Groot, M.N.N., Kerkhoven, R., de Vries, M., Ursing, B., de Vos, W.M. and Siezen, R. (2003).

- Complete genome sequence of *Lactobacillus plantarum* WCFS1. *Proc. Natl. Acad. Sci. USA*. 100: 1990-1995.
- Kolcuoglu, Y., Colak, A., Faiz, O. and Belduz, A.O. (2010). Cloning, expression and characterization of highly thermo- and pH-stable maltogenic amylase from a thermophilic bacterium *Geobacillus caldoxylosilyticus* TK4. *Process Biochem.* 45: 821-828.
- Kuriki, T. and Imanaka, T. (1989). Nucleotide sequence of the neopullulanase from *Bacillus sterothermophilus*. *J. Gen. Microbiol.* 135: 1521-1528.
- Kwon, S., Lee, P.C., Lee, E.G., Chang, Y.K. and Chang, N. (2000). Production of lactic acid by *Lactobacillus rhamnosus* with vitamin-supplemented soybean hydrolysate. *Enzyme Microb. Technol.* 26: 209-215.
- Lacks, S.A. and Springhorn, S.S. (1980). Renaturation of enzymes after polyacrylamide gel electrophoresis in the presence of sodium dodecyl sulfate. *J. Biol. Chem.* 225: 7467-7473.
- Laemmli, U.K. (1970). Cleavage of structural proteins during the assembly of the head of bacteriophage T4. *Nature*. 227: 680-685.
- Lee, H.S., Kim, J.S., Shim, K.H., Kim, J.W., Park, C.S. and Park, K.H. (2005). Quaternary structure and enzymatic properties of cyclomaltodextrinase from alkalophilic *Bacillus* sp. I-5. *Biologia*. 60: 73-77.
- Leroy, F. and Vuyst, L.D. (2001). Growth of the bacteriocin-producing *Lactobacillus sakei* strain CTC 494 in MRS broth is strongly reduced due to nutrient exhaustion: a nutrient depletion model for the growth of lactic acid bacteria. *Appl. Environ. Microb.* 67: 4407-4413.
- Li, X. and Yu, H.Y. (2011). Extracellular production of beta-amylase by a halophilic isolate, *Halobacillus* sp. LY9. *J. Ind. Microbiol. Biotechnol.* 38: 1837-1843.

- Lily, M.K., Bahuguna, A., Bhatt, K.K. and Dangwal, K. (2012). Production, partial purification and characterization of α -amylase from high molecular weight polycyclic aromatic hydrocarbons (HMW-PAHs) degrading *Bacillus subtilis* BMT4i (MTCC 9447). *Turk. J. Biochem.* 37: 463-470.
- Linko, Y.Y. and Javanainen, P. (1996). Simultaneous liquefaction, saccharification, and lactic acid fermentation on barley starch. *Enzyme Microb. Technol.* 19: 118-123.
- Litchfield, J.H. (2009). Lactic acid, Microbially Produced. In Encyclopedia of Microbiology ed. Schaechter, M. pp. 362-372 . Elsevier, Oxford, U.K.
- Lu, Z., He, F.H., Shi, Y., Lu, M. and Yu, L. (2009). Fermentative production of L(+)-lactic acid using hydrolyzed acorn starch, persimmon juice and wheat bran hydrolysate as nutrient. *Bioresour. Technol.* 101: 3642-3648.
- Mabrouk, S.B., Messaoud, E.B., Ayadi, D., Jemli, S., Roy, A., Mezghani, M. and Bejar, S. (2008). Cloning and sequencing of an original gene encoding a maltogenic amylase from *Bacillus* sp. US149 strain and characterization of the recombinant activity. *Mol. Biotechnol.* 38: 211-219.
- Maischberger, T., Mierau, I., Peterbauer, C.K., Hugenholtz, J. and Haltrich, D. (2010). High-level expression of *Lactobacillus* β -galactosidases in *Lactococcus lactis* using the food-grade, nisin-controlled expression system NICE. *J. Agric. Food Chem.* 58: 2279-2287.
- Marshall, J.J. (1975). α -amylase inhibitor from plants. *Am. Chem. Soc. Symp. Ser.* 15: 244-266.
- Mathiesen, G., Sveen, A., Brurberg, M.B., Fredriksen, L., Axelsson, L. and Eijsink, V.G.H. (2009). Genome-wide analysis of signal peptide functionality in *Lactobacillus plantarum* WCFS1. *BMC Genomics*. doi:10.1186/1471-2164-10-425.

- Matinez, F.A.C., Balciunas, E. M., Salgado, J.M., Gonzalez, J.M.D., Converti, A. and Oliveira, R.P.S. (2013). Lactic acid properties applications and production: A review. *Trends Food Sci. Technol.* 30: 7-83.
- Matthews, A.P. and Fu, W. (2001). Fermentation kinetics in the production of lactic acid from high strength wastewater. In Proceeding of the third Asia-Pacific conference on sustainable energy and environmental technology eds. Hu, X. and Lok, P. pp. 611-616. World Scientific, Singapore.
- Maurizi, M.R. (1992). Proteases and protein degradation in *Escherichia coli*. *Experientia*. 48. 178-201.
- Miller, G.L. (1959). Use of dinitrosalicylic acid reagent for determination of reducing sugar. *Anal Chem.* 31: 426-428.
- Miller, C., Fosmer, A., Rush, B., McMullin, T., Beacom, D. and Suominen, P. (2011). Industrial production of lactic acid. In Comprehensive Biotechnology ed. Moo-Yong, M. pp. 179-188. Elsevier, Amsterdam, The Netherlands.
- Narita, J., Nakahara, S., Fukuda, H. and Kondo, A. (2004) Efficient production of L(+)-lactic acid from raw starch by *Streptococcus bovis* 148. *J. Biosci. Bioeng.* 97: 423-425.
- Nguyen, C.M., Kim, J.S., Nguyen, T.N., Ki, K.S., Choi, G.J., Choi, Y.H., Jang, K.S. and Kim, J.C. (2013). Production of L- and D-lactic acid from *Curcuma long* biomass through simultaneous saccharification and cofermentation. *Bioresour. Technol.* <http://dx.doi.org/10.1016/j.biortech.2013.07.035>.
- Nguyen, C.M., Kim, J.S., Song, J.K., Choi, G.J., Choi, Y.H., Jang, K.S. and Kim, J.C. (2012a). D-lactic acid production from dry biomass of *Hydrodictyon reticulatum* by simultaneous saccharification and co-fermentation using *Lactobacillus coryniformis* subsp. *torquens*. *Biotechnol. Lett.* 34: 2235-2240.

- Nguyen, H.G., Nguyen, T.H., Nguyen, T.T., Peterbauer, C.K., Mathiesen, G. and Haltrich, D. (2012b). Chitinase from *Bacillus licheniformis* DSM23: Expression in *Lactobacillus plantarum* WCFS1 and biochemical characterization. *Protein Expr. Purif.*81: 166-174.
- Nguyen, T.T., Mathiesen, G., Fredriksen, L., Kittl, R., Nguyen, T.H., Eijssink, V.G.H., Haltrich, D. and Peterbauer, C.K. (2011a). A food-grade system for inducible gene expression in *Lactobacillus plantarum* using an alanine racemase-encoding selection marker. *J. Agric. Food Chem.* 59: 5617-5624.
- Nguyen, T.T., Nguyen, T.H., Maischberger, T., Schmelzer, P., Mathiesen, G., Eijssink, V.G.H., Haltrich, D. and Peterbauer, C.K. (2011b). Quantitative transcription analysis of the inducible expression system pSIP: Comparison of the overexpression of *Lactobacillus* spp. β -galactosidases in *Lactobacillus plantarum*. *Microb. Cell Fact.*doi:10.1186/1475-2859-10-46.
- Nishiguchi, M.K., Doukakis, P., Egan, M., Kizirian, D., Phillips, A., Prendini, L., Rosenbaum, H.C., Torres, E., Wyner, Y., DeSalle, R., Giribet, G. (2002). DNA isolation procedures. In: Techniques in molecular systematics and evolution. Desalle, G.R., Garibet, G., Wheeler, W. (eds). Birkhäuser Verlag Basel, Switzerland.
- Nishimoto, M., Mori, H., Moteki, T., Takamura, Y., Iwai, G., Miyaguchi, Y., Okuyama, M., Wongchawalit, J., Surarit, R., Svasti, J., Kimura, A. and Chiba, S. (2007). Molecular cloning of cDNAs and genes for three α -glucosidases from European honeybees, *Apis mellifera* L., and heterologous production of recombinant enzymes in *Pichia pastoris*. *Biosci. Biotechnol. Biochem.* 71: 1703-1761.
- Nolasco-Hipolito, C., Zarraba, O. C., Kamaldin, R. M., Teck-Yee, L., Lihan S., Bujang, K. B. and Nitta Y. (2012). Lactic acid production by *Enterococcus faecium* in liquefied sago starch. *AMB Express.* doi:10.1186/2191-0855-2-53.

- Oh, K.W., Kim, M.J., Kim, H.Y., Kim, B.Y., Baik, M.Y., Auh, J.H. and Park, C.S. (2005). Enzymatic characterization of a maltogenic amylase from *Lactobacillus gasser* ATCC 33323 expressed in *Escherichia coli*. *FEMS Microbiol Lett.* 252: 175-181.
- Ohkouchi, Y. and Inoue, Y. (2006). Direct production of L(+)-lactic acid from starch and food wastes using *Lactobacillus manihotivorans* LMG18011. *Bioresour. Technol.* 97: 1554-1562.
- Panda, S.H. and Ray, R.C. (2008). Direct conversion of raw starch to lactic acid by *Lactobacillus plantarum* MTCC 1407 in semi-solid fermentation using sweet potato (*Ipomoea batatas* L.) flour. *J. Sci. Ind. Res.* 67: 531-537.
- Petrov, K., Urshev, Z. and Petrova, P. (2008). L(+)-lactic acid production from starch by a novel amylolytic *Lactobacoccus lactis* subsp. *lactis* B84. *Food Microbiol.* 25: 550-557.
- Petrova, P. and Petrov, K. (2012). Direct starch conversion into L(+)-lactic acid by a novel amylolytic strain of *Lactobacillus paracasei* B41. *Starch* 64:10-17.
- Pintado, J., Guyot, J.P. and Raimbault, M. (1999). Lactic acid production from mussel processing wastes with an amylolytic bacterial strain. *Enzyme Microb. Technol.* 24: 590-598.
- Prakash, O. and Jaiswal, N. (2010). A highly efficient and thermostable α -amylase from soya bean seeds. *Biotechnol. Appl. Biochem.* 57: 105-110.
- Probst, M., Fritsch, A., Wagner, A. and Insam, H. (2013). Biowaste: A *Lactobacillus* habitat and lactic acid fermentation substrate. *Bioresour. Technol.* 143: 647-652.
- Rai, M. and Padh, H. (2001). Expression system for production of heterologous protein. *Curr. Sci.* 80: 1121-1128.

- Reddy, G., Altaf, Md., Naveena, B.J., Venkateshwar, M. and Vijay Kumar, E. (2008). Amylolytic bacterial lactic acid fermentation-A review. *Biotechnol. Adv.* 26: 22-34.
- Rientrakoonchai, W. Screening of amylolytic lactic acid bacteria for lactic acid production from starchy wastewater. Thesis for Master of Science, Chiang Mai University, 2010.
- Rodriguez-Sanoja, R., Morlon-Guyot, J., Jore, J., Pintado, J., Juge, N. and Guyot, J.P. (2000). Comparative characterization of complete and truncated forms of *Lactobacillus amylovorus* α -amylase and role of the C-terminal direct repeats in raw-starch binding. *Appl. Environ. Microbiol.* 68: 3350-3356.
- Rodriguez-Sanoja, R., Ruiz, B., Guyot, J.P. and Sanchez, S. (2005). Starch-binding domain affects catalysis in two *Lactobacillus* α -amylases. *Appl. Environ. Microbiol.* 71: 297-302.
- Saboury, A.A. (2002). Stability, activity and binding properties study of α -amylase upon interaction with Ca^{2+} and Co^{2+} . *Biologia.* 11: 211-228.
- Santiago, M., Linares, L., Sanchez, S. and Rodriguez-Sanoja, R. (2005). Functional characteristics of the starch-binding domain of *Lactobacillus amylovorus* α -amylase. *Biologia.* 60: 111-114.
- Sarkar, N., Ghosh, S.K., Bannerjee, S. and Aikat, K. (2011). Bioethanol production from agricultural waste: An overview. *Renew Energ.* 37: 19-27.
- Satoh, E., Niimura, Y., Uchimura, T., Kozaki, M. and Komagata, K. (1993). Molecular cloning and expression of two α -amylase genes from *Streptococcus bovis* 148 in *Escherichia coli*. *Appl. Environ. Microbiol.* 3669-3673.
- Satoh, E., Uchimura, T., Kudo, T. and Komagata, K. (1997). Purification and characterization, and nucleotide sequence of an intracellular maltotriose-producing α -amylase from *Streptococcus bovis* 148. *Appl. Environ. Microbiol.* 63: 4941-4944.

- Schumann, C., Michlmayr, H., Eder, R., del Hierro, A.M., Kulbe, K.D., Mathiesen, G. and Nguyen, T.H. (2012). Heterologous expression of *Oenococcus oeni* malolactic enzyme in *Lactobacillus plantarum* for improved malolactic fermentation. *AMB Express*. doi:10.1186/2191-0855-2-19.
- Sharma, A. and Satyanarayana, T. (2013). Microbial acid-stable α -amylases: Characteristics, genetic engineering and applications. *Process Biochem.* 48: 201-211.
- Sheikh Q.I. and Hornby D.P. (2013). Gene cloning essentials. In: Divan A. and Royds J. (ed), Tools and techniques in biomolecular science. Oxford University Press, UK., pp 3-22.
- Shen, G.J., Saha, B.C., Lee, Y.E., Bhatnagar, L. and Zeikus, J.G. (1988). Purification and characterization of a novel thermostable β -amylase from *Clostridium thermosulphurogenes*. 254: 835-840.
- Shibata, K., Flores, D.M., Kobayashi, G. and Sonomoto, K. (2007). Direct lactic acid fermentation with sago starch by a novel amylolytic lactic acid bacterium, *Enterococcus faecium*. *Enzyme Microb. Technol.* 41: 149-155.
- Sivaramakrishnan, S., Gangadharan, D., Madhavan, K. (2006). α -amylases from microbial sources-an overview on recent developments. *Food Technol. Biotechnol.* 44: 173-184.
- Son, M.S. and Kwon, Y.J. (2013). Direct fermentation of starch to L(+)-lactic acid by fed-batch culture of *Lactobacillus manihotivorans*. *Food Sci. Biotechnol.* 22: 289-293.
- Sorensen, H.P. and Mortensen, K.K. (2005). Advanced genetic strategies for recombinant protein expression in *Escherichia coli*. *J. Biotechnol.* 115: 113-128.
- Sorvig, E., Gronqvist, S., Naterstad, K., Mathiesen, G., Eijsink, V.G.H. and Axelsson, L. (2003). Construction of vectors for inducible gene expression in *Lactobacillus sakei* and *L. plantarum*. *FEM Microb. Lett.* 229: 119-126.

- Sorvig, E., Mthiesen, G., Naterstad, K., Eijsink, V.G.H. and Axelsson, L. (2005). High-level, inducible gene expression in *Lactobacillus sakei* and *Lactobacillus plantarum* using versatile expression vectors. *Microbiology*. 151: 2439-2449.
- Souza, P.M. and Magalhaes, P.O. (2010). Application of microbial α -amylase in industry-a review. *Braz. J. Microbiol.* 41: 850-861.
- Svensson, B., Jensen, M.T., Mori, H., Bak-Jensen, K.S., Bonsager, B., Nielsen, P.K., Kramhoft, B., Praetorius-Ibba, M., Nohr, J., Juge, N., Greffe, L., Williamson, G. and Driguez, H. (2002). Fascinating facets of function and structure of amylolytic enzymes of glycoside hydrolase family 13. *Biologia*. 57: 5-19.
- Takata, H., Kuriki, T., Okada, S., Takesada, Y., Iizuka, M., Minamiura, N. and Imnaka, T. (1992). Action of neopullulanase. Neopullulanase catalyzes both hydrolysis and transglycosylation at α -(1, 4) and α -(1,6) glycosidic linkages. *J. Biol. Chem.* 267: 18447-18452.
- Talamond, P., Desseaux, V., Moreau, Y., Santimone, M. and Marchis-Moouren, G. (2002). Isolation, characterization and inhibition by acarbose of the α -amylase from *Lactobacillus fermentum*: comparison with *Lb. manihotivorans* and *Lb. plantarum* amylases. *Comp. Biochem. Physiol.* 133: 351-360.
- Talamond, P., Noirot, M. and de Kochko, A. (2006). The mechanism of action of α -amylase from *Lactobacillus fermentum* on maltooligosaccharides. *J. Chromatogr. B*. 834: 42-47.
- Tanaka, A. and Hoshino, E. (2002). Calcium-binding parameter of *Bacillus amyloliquefaciens* α -amylase determined by inactivated kinetics. *Biochem. J.* 364: 635-639.
- Taniguchi, H. and Honda, Y. (2009). Amylases. In: Schaechter, M. (ed) Encyclopedia of Microbiology, 3rd edn. Elsevier, CA, pp 159-173.
- Tester, R.F, Karkalas, J. and Qi, X. (2004). Starch-composition, fine structure and architecture. *J. Cereal. Sci.* 39: 151-165.

- Torriani, S., Felis, G. and Dellaglio, F. (2001) Differentiation of *Lactobacillus plantarum*, *L. pentosus*, and *L. paraplantarum* by *recA* gene-derived primers. *Appl. Environ. Microbiol.* 67: 3450-3454.
- van der Maarel, M.J.E.C., van der Veen, B., Uitdehaag, J.C.M., Leemhuis, H. and Dijkhuizen, L. (2002). Properties and applications of starch-converting enzymes of the α -amylase family. *J. Biotechnol.* 94: 137-155.
- Vijayakumar, J., Aravindan, R. and Viruthagiri, T. (2008). Recent trends in the production, purification and application of lactic acid. *Chem. Biochem. Eng.* 22: 254-264.
- Vishnu, C., Naveena, B.J., Altaf, Md., Venkateshwar, M. and Reddy, G. (2006). Amylopullulanase-A novel enzyme of *L. amylophilus* GV6 in direct fermentation of starch to L(+) lactic acid. *Enzyme Microb. Technol.* 38: 545- 550.
- Vishnu, C., Seenaya, G. and Reddy, G. (2000). Direct conversion of starch to L(+) lactic acid by amylase producing *Lactobacillus amylophilus* GV6. *Bioprocess Eng.* 23: 155-158.
- Vishnu, C., Seenayya, G. and Reddy, G. (2002). Direct fermentation of various pure and crude starch substrates to L(+) lactic acid using *Lactobacillus amylophilus* GV6. *World J. Microbiol. Biotechnol.* 18: 429-433.
- Wang, L., Zhao, B., Liu, B., Yang, C., Yu, B., Li, Q., Ma, C., Xu, P. and Ma, Y. (2010). Efficient production of L-lactic acid from cassava powder by *Lactobacillus rhamnosus*. *Bioresour. Technol.* 101: 7895-7901.
- Wee, Y.J., Kim, J.N. and Ryu, H.W. (2006). Biotechnological production of lactic acid and its recent applications. *Food Technol. Biotechnol.* 44: 163-172.
- Wee, Y.J., Reddy, L.V.A. and Ryu, H.W. (2008). Fermentative production of L(+)-lactic acid from starch hydrolyzate and corn steep liquor as inexpensive nutrients by batch culture of *Enterococcus faecalis* RKY1. *J. Chem. Technol. Biotechnol.* 83: 1387-1393.

- Xiao, Z., Storms, R. and Tsang, A.A. (2006). A quantitative starch-iodine method for measuring alpha-amylase and glucoamylase activities. *Anal. Biochem.* 351: 146-148.
- Xiaodong, W., Xuan, G. and Rakshit, S.K. (1997). Direct fermentation of lactic acid from cassava or other starch substrates. *Biotechnol. Lett.* 9: 841-843.
- Xue, Z., Wang, L., Ju, J., Yu, B., Xu, P. and Ma, Y. (2012). Efficient production of polymer-grade L-lactic acid from corn stover hydrolyzate by thermophilic *Bacillus* sp. strain XZL4. *Springerplus*. doi:10.1186/2193-1801-1-43.
- Yan, J., Bajpai, R., Iannotti, E., Popovic, M. and Mueller, R. (2001). Lactic acid fermentation from enzyme-thinned starch with immobilized *Lactobacillus amylovorus*. *Chem. Biochem. Eng. Q.* 2: 59-63.
- Zdzieblo, A. and Synowiecki, J. (2002). New source of the thermostable α -glucosidase suitable for single step starch processing. *Food Chem.* 79: 485- 491.