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Isolation of thermotolerant bacteria producing fibrinolytic enzyme (Article)

Ab. Shukor, N.A.[a], Amid, A.[b], Ismail, M.[b], Abd Samad, N.S.[a]

[a]Department of Biotechnology Engineering, International Islamic University Malaysia, P.O. Box 10, Kuala Lumpur, Malaysia
[b]Bioprocess and Molecular Engineering Research Unit, Department of Biotechnology Engineering, International Islamic University Malaysia, P.O. Box 10, Kuala Lumpur, Malaysia

Abstract

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Fibrinolytic enzymes were widely used in the treatment of cardiovascular diseases. However, the efficiency of the commercial enzymes are still lack of perfection because there are many side effects as well as not tolerant to downstream processing such as heat sensitive during spray drying process. Therefore, this study presents newly isolated thermophiles bacteria producing fibrinolytic enzyme. Sample was collected from Hot Spring Selayang at Selayang Selangor. Spread plate agar containing skim milk powder growth at pH 7, 53°C for 24 hours was utilized to isolate thermotolerant bacteria producing protease. Further isolation on bacteria producing fibrinolytic enzyme was carried out using fibrin plate. 16S rDNA gene sequence analysis was used to identify the genotype of the isolates. 27 colonies of thermotolerant bacteria were isolated, however, only 19 of them showing proteolytic activity. All of the 19 isolates are motile and cocci in shapes, with 4 types of arrangement, which are single, diplo (pair), strepto (chain) and staphylo (cluster). HSP04 and HSP11 are gram positive bacteria and others are gram negative. From 19 isolates only 6 were chosen for further analysis. HSP23 showed the highest fibrinolytic activity compared with others. HSP23 was identified as Bacillus licheniformis with 98 % similarity to Bacillus licheniformis DCM 13 and Bacillus licheniformis strain ATCC 14580. © 2015 Penerbit UTM Press. All rights reserved.

Author keywords

Bacillus licheniformis Fibrinolytic enzyme Thermotolerant bacteria

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1 WHO
(2011) *Cardiovascular Disease*. Cited 345 times.
www.who.int/cardiovascular_diseases/en

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(2015) Journal of General and Applied Microbiology

2 Voet, D., Voet, J.G.
(1990) *Biochemistry*, pp. 1087-1095. Cited 3629 times.
2nd ed. John Wiley and Sons, NY, USA

3 Gupta, R., Sharma, V., Sridhara, S., Singh, B.P., Arora, N.
Identification of serine protease as a major allergen of Curvularia lunata

(2004) *Allergy: European Journal of Allergy and Clinical Immunology*, 59 (4), pp. 421-427. Cited 30 times.
doi: 10.1046/j.1398-9995.2003.00378.x

View at Publisher

4 Collen, D., Lijnen, H.R.
Staphylokinase, a fibrin-specific plasminogen activator with therapeutic potential?

(1994) *Blood*, 84 (3), pp. 680-686. Cited 94 times.

View at Publisher

5 Raju, E.V.N., Divakar, G.
Screening and Isolation of Fibrinolytic Protease Producing Bacteria from Various Regions in Bangalore
(2013) *Scholars Academic Journal of Pharmacy (SAJP)*, 2 (1), pp. 27-30.

6 Mukherjee, A.K., Rai, S.K.
A statistical approach for the enhanced production of alkaline protease showing fibrinolytic activity from a newly isolated Gram-negative Bacillus sp. strain AS-S20-I

(2011) *New Biotechnology*, 28 (2), pp. 182-189. Cited 32 times.
doi: 10.1016/j.nbt.2010.11.003

View at Publisher

7 Huang, S., Pan, S., Chen, G., Huang, S., Zhang, Z., Li, Y., Liang, Z.
Biochemical characteristics of a fibrinolytic enzyme purified from a marine bacterium, Bacillus subtilis HQS-3

(2013) *International Journal of Biological Macromolecules*, 62, pp. 124-130. Cited 21 times.
doi: 10.1016/j.ijbiomac.2013.08.048

View at Publisher

8 Mahajan, P.M., Nayak, S., Lele, S.S.
Fibrinolytic enzyme from newly isolated marine bacterium Bacillus subtilis ICTF-1: Media optimization, purification and characterization

(2012) *Journal of Bioscience and Bioengineering*, 113 (3), pp. 307-314. Cited 37 times.
doi: 10.1016/j.jbiosc.2011.10.023

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9 Jeong, S.-J., Heo, K., Park, J.Y., Lee, K.W., Park, J.-Y., Joo, S.H., Kim, J.H.
Characterization of AprE176, a fibrinolytic enzyme from Bacillus subtilis HK176

(2015) *Journal of Microbiology and Biotechnology*, 25 (1), pp. 89-97. Cited 6 times.
http://www.jmb.or.kr/journal/download.php?Filedir=../submission/Journal/025/&num=6628
doi: 10.4014/jmb.1409.09087

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10 Afifah, D.N., Sulchan, M., Syah, D., Yanti, Suhartono, M.T., Kim, J.H.
Purification and characterization of a fibrinolytic enzyme from Bacillus pumilus 2.g isolated from gembus, an Indonesian fermented food

(2014) *Preventive Nutrition and Food Science*, 19 (3), pp. 213-219. Cited 8 times.
http://pdf.medrang.co.kr/paper/pdf/PNF/2014/019/PNF019-03-11.pdf
doi: 10.3746/pnf.2014.19.3.213

View at Publisher

11 Sanusi, N.A., Jamaluddin, H.
Purification of a fibrinolytic enzyme from Bacillus sp. isolated from budu

(2012) *Jurnal Teknologi (Sciences and Engineering)*, 59 (SUPPL.1), pp. 63-68. Cited 2 times.
http://www.penerbit.utm.my/onlinejournal/59/K/JT_SE_59okt2012_KeluaranKhas1_12.pdf

12 Vijayaraghavan, P., Vincent, S.G.P.
Statistical optimization of fibrinolytic enzyme production by Pseudoalteromonas sp. IND11 using cow dung substrate by response surface methodology

(2014) *SpringerPlus*, 3 (1), pp. 1-10. Cited 5 times.
http://www.springerplus.com/archive
doi: 10.1186/2193-1801-3-60

View at Publisher

13 Prihanto, A.A., Dariusfirdaus, M.
Proteolytic and Fibrinolytic Activities of Halophilic Lactic Acid Bacteria from Two Indonesian Fermented Foods
(2013) *Journal of Microbiology, Biotechnology and Food Sciences.*, 2 (5), pp. 2291-2293. Cited 3 times.

14 Montriwong, A., Kaewphuak, S., Rodtong, S., Roytrakul, S., Yongsawatdigul, J.
Novel fibrinolytic enzymes from Virgibacillus halodenitrificans SK1-3-7 isolated from fish sauce fermentation

(2012) *Process Biochemistry*, 47 (12), pp. 2379-2387. Cited 12 times.
doi: 10.1016/j.procbio.2012.09.020

View at Publisher

15 Raj, A., Khess, N., Pujari, N., Bhattacharya, S., Das, A., Rajan, S.S.
Enhancement of protease production by Pseudomonas aeruginosa isolated from dairy effluent sludge and determination of its fibrinolytic potential

(2012) *Asian Pacific Journal of Tropical Biomedicine*, 2 (3 SUPPL.), pp. S1845-S1851. Cited 12 times.
doi: 10.1016/S2221-1691(12)60506-1

View at Publisher

16 Lee, J., Park, S., Choi, W.-A., Lee, K.-H., Jeong, Y.-K., Kong, I.-S., Park, S.
Production of a fibrinolytic enzyme in bioreactor culture by Bacillus subtilis BK-17

(1999) *Journal of Microbiology and Biotechnology*, 9 (4), pp. 443-449. Cited 14 times.

View at Publisher

17 Seo, J.-H., Lee, S.-P.
Production of fibrinolytic enzyme from soybean grits fermented by Bacillus firmus NA-1

(2004) *Journal of Medicinal Food*, 7 (4), pp. 442-449. Cited 28 times.

View at Publisher

18 Al-Juamily, E.F., Al-Zaidy, B.H.
Optimization Conditions of Production Fibrinolytic Enzyme from Bacillus lichniformis B4 Local Isolate
(2012) *British Journal of Pharmacology and Toxicology*, 3 (6), pp. 289-295. Cited 3 times.

19 Kumar, S., Nussinov, R.
How do thermophilic proteins deal with heat?
(2001) *Cellular and Molecular Life Sciences*, 58 (9), pp. 1216-1233. Cited 282 times.
View at Publisher

20 de Macario, E.C., Macario, A.J.
Stressors, stress and survival: overview.
(2000) *Frontiers in bioscience : a journal and virtual library*, 5, pp. D780-786. Cited 24 times.
View at Publisher

21 Calaus, D., Berkeley, C.W.
The Genus Bacillus
(1986) *Bergey's Manual of Systematic Bacteriology*, 2 (34), pp. 1105-1139. Cited 1429 times.
Sneath PHA edition. Williams, Wilkins, Baltimore

22 Astrup, T., Müllertz, S.
The fibrin plate method for estimating fibrinolytic activity
(1952) *Archives of Biochemistry and Biophysics*, 40 (2), pp. 346-351. Cited 1047 times.
View at Publisher

23 Kim, H.-K., Kim, G.U.-T., Kim, D.-K., Choi, W.-A., Park, S.-H., Jeong, Y.-K., Kong, I.N.-S.
Purification and characterization of a novel fibrinolytic enzyme from Bacillus sp. KA38 originated from fermented fish
(1997) *Journal of Fermentation and Bioengineering*, 84 (4), pp. 307-312. Cited 82 times.
doi: 10.1016/S0922-338X(97)89249-5
View at Publisher

24 Singh, T.A., Devi, K.R., Ahmed, G., Jeyaram, K.
Microbial and endogenous origin of fibrinolytic activity in traditional fermented foods of Northeast India
(2014) *Food Research International*, 55, pp. 356-362. Cited 13 times.
doi: 10.1016/j.foodres.2013.11.028
View at Publisher

25 Studier, F.W.
Protein production by auto-induction in high density shaking cultures.
(2005) *Protein expression and purification*, 41 (1), pp. 207-234. Cited 2495 times.
View at Publisher

26 Chitte, R.R., Dey, S.
Production of a fibrinolytic enzyme by thermophilic Streptomyces species
(2002) *World Journal of Microbiology and Biotechnology*, 18 (4), pp. 289-294. Cited 20 times.
doi: 10.1023/A:1015252607118
View at Publisher

27 Ghani, M., Ansari, A., Aman, A., Zohra, R.R., Siddiqui, N.N., Qader, S.A.U.
Isolation and characterization of different strains of Bacillus licheniformis for the production of commercially significant enzymes

(2013) *Pakistan Journal of Pharmaceutical Sciences*, 26 (4), pp. 691-697. Cited 8 times.
http://www.pjps.pk/CD-PJPS-26-4-13/Paper-6.pdf

28 Frankena, J., van Verseveld, H.W., Stouthamer, A.H.
A continuous culture study of the bioenergetic aspects of growth and production of exocellular protease in Bacillus licheniformis

(1985) *Applied Microbiology and Biotechnology*, 22 (3), pp. 169-176. Cited 60 times.
doi: 10.1007/BF00253604

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29 Schroeter, R., Voigt, B., Jürgen, B., Methling, K., Pöther, D.-C., Schäfer, H., Albrecht, D., (...), Schweder, T.
The peroxide stress response of Bacillus licheniformis

(2011) *Proteomics*, 11 (14), pp. 2851-2866. Cited 21 times.
doi: 10.1002/pmic.201000461

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