

Xylanase Production by *Bacillus pumilus* by Solid State Fermentation Using Paddy Husk as Support

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The work was aimed to optimize the xylanase production by *Bacillus pumilus*, in solid state fermentation system using paddy husk as the substrate. To optimize the growth conditions for better xylanase production, solid media was prepared in 1000mL Erlenmeyer flask by mixing 20 g of support with 80mL of liquid fermentation medium, containing (g^L⁻¹) xylan, 20.0; peptone, 2.0; yeast extract, 2.5; K₂HPO₄, 2.5; KH₂PO₄, 1.0; NaCl, 0.1; (NH₄)₂SO₄, 2.0 and CaCl₂.2H₂O, 0.005; MgCl₂.6H₂O, 0.005; and FeCl₃, 0.005. Though xylanase production has started on the 2nd day, the highest activity (151.96Ug⁻¹ DM; Dry matter) was obtained on the 6th day. Xylanase activity was highest and increased by 1.11 times than the control, when paddy husk liquid fermentation media ratio was optimized as 2:9. When the initial pH of the medium was changed from 6.0 to 12.0, highest xylanase activity (150.94 Ug⁻¹DM - 6d) was obtained at pH 9.0. As the xylanase activity was increased by 1.2 times at pH 9.0 than that obtained in the medium which had the pH of 7.0, pH 9.0 was selected. Since the highest xylanase activity (161.17Ug⁻¹ DM - 6d) obtained at 40°C was 1.19 times higher than that obtained at 30°C, 40°C was selected for the cultivation of *Bacillus pumilus*. The inoculum of *Bacillus pumilus* prepared from 24h old slant, gave the xylanase activity of 166.49 Ug⁻¹DM and which was 1.03 times higher than that of the 18h old slant. Therefore 24h old slant was selected for further studies. As the xylanase production was 1.12 times higher when 15h aged inoculum was used, than that of 12h aged inoculum, 15h aged inoculum was selected for further studies. Based on the optimization of the culture conditions, the xylanase production by *Bacillus pumilus* was increased by 1.21 times than that under the initial non-optimized condition.