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## Cost Effective production of Penicillin and biogas from rotten grapes by novel fermentation technique

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India produces approx. 13 million tonnes grapes annually, of which approximately 30% goes as waste. Grape juice primarily contains fructose, glucose and sucrose as carbon sources which can be fermented to Penicillin. During the processing of grape juice, huge quantities of grape pulp (pomace) are generated which causes environmental pollution problems. This can be converted to biofuel (Biogas/biomethane) by anaerobic technology (methanogenesis). Penicillin was produced using rotten grape juice medium under different cultural conditions- mat culture and free mycelial format both in batch as well as in fed-batch mode and also grown using pellet morphology in submerged fermentation. The potency/yield was assessed by performing agar well diffusion assay of the respective fermentation broths by preparing cell-free extracts. The diameter of the inhibition zone was taken as a measure of potency of each of the formulation using raw grape juice as the basic substrate. It was found that compared to standard antibiotic discs available in the market, with 200 microlitres of cell-free culture supernatants, mat culture produced 4.9mm diameter, free mycelia in batch mode produced 11.5mm, free mycelia in fed-batch mode produced 13.5mm and pellet morphology produced an inhibition zone of 24mm diameter. Standard antibiotic disc produced 27mm diameter with 10 microgram antibiotic in it. The biogas production from pretreated ( pretreatment with 1% NaOH for 12 hours) grape pulp/pomace was found to be 33.7% more compared to untreated control.

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