

REFERENCES

- Adetona, O., Ozoh, O. B., Oluseyi, T., Uzoegwu, Q., Odei, J., & Lucas, M. (2020). An exploratory evaluation of the potential pulmonary, neurological and other health effects of chronic exposure to emissions from municipal solid waste fires at a large dumpsite in Olusosun, Lagos, Nigeria. *Environmental science and pollution research*, 27, 30885-30892.
- Ahmaditabatabaei, S., Kyazze, G., Iqbal, H. M., & Keshavarz, T. (2021). Fungal enzymes as catalytic tools for polyethylene terephthalate (PET) degradation. *Journal of Fungi*, 7(11), 931.
- Ahmed, M. E. (2018). Extraction and purification of protease from *Aspergillus niger* isolation. *Pharm Pharmacol Int J*, 6(2), 96-9.
- Akhigbe, G. E., EnochOghene, A. E., Olumurewa, K. O., Koleoso, O. B., & Ogbonna, N. D. (2023). Characterization of low-density polyethylene (LDPE) films degraded using bacteria strains isolated from oil-contaminated soil. *Environmental Technology*, 1-7.
- Albertsson, A. C., Andersson, S. O., & Karlsson, S. (1987). The mechanism of biodegradation of polyethylene. *Polymer degradation and stability*, 18(1), 73-87.
- Albertsson, A. C., Sares, C. H. R., & Karlsson, S. (1993). Increased biodegradation of LDPE with nonionic surfactant. *Acta polymerica*, 44(5), 243-246.
- Ali M I., Perveen Q., Ahmad B., Javed I., Razi-Ul-Hussnain R., Andleeb S., Atique N., Ghumro P. B., Ahmed S., Hameed A. (2009). Biodegradation studies of cellulose blended polyvinyl chloride films. *Int J Agric Biol* 11: 577–580.
- Ali, S. S., & Vidhale, N. N. (2013). Protease production by *Fusarium oxysporum* in solid-state fermentation using rice bran. *American Journal of Microbiological Research*, 1(3), 45-47.
- Alshehrei, F. (2017). Biodegradation of low density polyethylene by fungi isolated from Red Sea water. *International Journal of Current Microbiology and Applied Sciences*, 6(8), 1703-9.
- Alvarez-Macarie, E., Augier-Magro, V., & Baratti, J. (1999). Characterization of a thermostable esterase activity from the moderate thermophile *Bacillus licheniformis*. *Bioscience, biotechnology, and biochemistry*, 63(11), 1865-1870.
- Amaral-Zettler, L.A., Zettler, E.R., Mincer, T.J. (2020). Ecology of the plastisphere. *Nat. Rev. Microbiol.* 18, 139e151.
- Amin, R., Gul, R., & Mehrab, A. (2013). Hospital Waste Management: Practices in different hospitals of Distt. Peshawar. *The Professional Medical Journal*, 20(06), 988-994.
- Anastasi, A., Tigini, V., Varese, G.C. (2013). The bioremediation potential of different ecophysiological groups of fungi. In: Fungi as Bioremediators. Springer Berlin Heidelberg, pp. 29e49.

- Andrady, A. L. (2017). The plastic in microplastics: A review. *Marine pollution bulletin*, 119(1), 12-22.
- Anonymous. Ecological assessment of ECM plastics (1999) Report by Chem Risk— A service of Mc Laren Hart Inc. Ohio.Ohio: MicrotechResearch Inc. p. 14.
- Asemoloye, M. D., Tosi, S., Daccò, C., Wang, X., Xu, S., Marchisio, M. A., ... & Pecoraro, L. (2020). Hydrocarbon degradation and enzyme activities of *Aspergillus oryzae* and *Mucor irregularis* isolated from nigerian crude oil-polluted sites. *Microorganisms*, 8(12), 1912.
- Awasthi, S., Srivastava, N., Singh, T., Tiwary, D., & Mishra, P. K. (2017). Biodegradation of thermally treated low density polyethylene by fungus *Rhizopus oryzae* NS 5. *3 Biotech*, 7, 1-8.
- Ayeni, T. O., Arotupin, D. J., & Ayo, O. E. (2022). Biodegradation of polyethylene by indigenous fungi from waste recycling site, South West, Nigeria. *Bulletin of the National Research Centre*, 46(1), 182.
- Ayub, S. and Khan, A.H. (2011). Landfill practice in India: A review. *J. Chem. Pharm. Res.* 3(4): 270-279.
- Azoulay, D., Villa, P., Arellano, Y., Gordon, M. F., Moon, D., Miller, K. A., ... & Kistler, A. (2019). *Plastic & health: the hidden costs of a plastic planet*. Geneva, Switzerland: CIEL.
- B. Lee, A.L. Pometto, A. Fratzke, T.B. Bailey, Biodegradation of degradable plastic polyethylene by *Phanerochaete* and *Streptomyces* species, *Appl. Environ. Microbiol.* 57 (3) (1991) 678–685. 16348434.
- Bains, G., Sampath Kumar, A., Rudrappa, T., Alff, E., Hanson, T. E., & Bais, H. P. (2009). Native plant and microbial contributions to a negative plant-plant interaction. *Plant physiology*, 151(4), 2145-2151.
- Balasubramanian, V., Natarajan, K., Rajeshkannan, V., & Perumal, P. (2014). Enhancement of in vitro high-density polyethylene (HDPE) degradation by physical, chemical, and biological treatments. *Environmental Science and Pollution Research*, 21, 12549-12562.
- Baldrian, P. (2004). Purification and characterization of laccase from the white-rot fungus *Daedalea quercina* and decolorization of synthetic dyes by the enzyme. *Applied Microbiology and Biotechnology*, 63, 560-563.
- Barkha Mathur. (2018, April 6) Malls and mega stores well prepared to cope ban, *The times of India*. (<https://timesofindia.indiatimes.com/city/nagpur/malls-and-mega-stores-well-prepared-to-cope-with-ban/articleshow/63634294.cms>).
- Barnett, H. L., & Hunter, B. B. (1972). Illustrated genera of imperfect fungi. *Illustrated genera of imperfect fungi.*, (3rd ed).

- Bertrand, B., Martínez-Morales, F., Tinoco-Valencia, R., Rojas, S., Acosta-Urdapilleta, L., & Trejo-Hernández, M. R. (2015). Biochemical and molecular characterization of laccase isoforms produced by the white-rot fungus *Trametes versicolor* under submerged culture conditions. *Journal of molecular catalysis B: Enzymatic*, 122, 339-347.
- Bettin, F., Montanari, Q., Calloni, R., Gaio, T. A., Silveira, M. M., & Dillon, A. J. (2009). Production of laccases in submerged process by *Pleurotus sajor-caju* PS-2001 in relation to carbon and organic nitrogen sources, antifoams and Tween 80. *Journal of Industrial Microbiology and Biotechnology*, 36(1), 1-9.
- Bhardwaj, H., Gupta, R., & Tiwari, A. (2013). Communities of microbial enzymes associated with biodegradation of plastics. *Journal of Polymers and the Environment*, 21(2), 575-579.
- Bosshard, P. P. (2011). Incubation of fungal cultures: how long is long enough?. *Mycoses*, 54(5), e539-e545.
- Brinda Sarkar. (2022, July 7) Shopping minus plastic bags, My Kolkata. (<https://www.telegraphindia.com/my-kolkata/news/shopping-minus-plastic-bags/cid/1873636>).
- Canopoli, L., Coulon, F., & Wagland, S. T. (2020). Degradation of excavated polyethylene and polypropylene waste from landfill. *Science of the Total Environment*, 698, 134125.
- Carduner, K. R., Peck, M. P., Carter III, R. O., & Killgoar Jr, P. C. (1989). An infrared spectroscopic study of polyethylene terephthalate degradation in polyester fiber/nitrile rubber composites. *Polymer degradation and stability*, 26(1), 1-10.
- Çepelioğullar, Ö., & Pütün, A. E. (2014). Products characterization study of a slow pyrolysis of biomass-plastic mixtures in a fixed-bed reactor. *Journal of Analytical and Applied Pyrolysis*, 110, 363-374.
- Chang, A. J., Fan, J., & Wen, X. (2012). Screening of fungi capable of highly selective degradation of lignin in rice straw. *International Biodeterioration & Biodegradation*, 72, 26-30.
- Chatterjee, S., Roy, B., Roy, D., & Banerjee, R. (2010). Enzyme-mediated biodegradation of heat-treated commercial polyethylene by Staphylococcal species. *Polymer Degradation and Stability*, 95(2), 195-200.
- Chattopadhyay, I. (2022). Role of microbiome and biofilm in environmental plastic degradation. *Biocatalysis and Agricultural Biotechnology*, 39, 102263.
- Chaudhary, A. K., Chitrik, S. P., & Vijayakumar, R. P. (2022). Influence of nitric acid on biodegradation of polystyrene and low-density polyethylene by *Cephalosporium* species. *Archives of Microbiology*, 204(8), 489.

- Chaudhary, A. K., Chitriv, S. P., Chaitanya, K., & Vijayakumar, R. P. (2023). Influence of ultraviolet and chemical treatment on the biodegradation of low-density polyethylene and high-density polyethylene by *Cephalosporium* strain. *Environmental Monitoring and Assessment*, 195(3), 395.
- Cheng, M., Zeng, G., Huang, D., Yang, C., Lai, C., Zhang, C., & Liu, Y. (2017). Advantages and challenges of Tween 80 surfactant-enhanced technologies for the remediation of soils contaminated with hydrophobic organic compounds. *Chemical Engineering Journal*, 314, 98-113.
- Chhaya, U., & Gupte, A. (2013). Effect of different cultivation conditions and inducers on the production of laccase by the litter-dwelling fungal isolate *Fusarium incarnatum* LD-3 under solid substrate fermentation. *Annals of microbiology*, 63(1), 215-223.
- Christakopoulos, P., Mamma, D., Kekos, D., & Macris, B. J. (1999). Enhanced acetyl esterase production by *Fusarium oxysporum*. *World Journal of Microbiology and Biotechnology*, 15, 443-446.
- Christakopoulos, P., Tzalas, B., Mamma, D., Stamatis, H., Liadakis, G. N., Tzia, C., ... & Macris, B. J. (1998). Production of an esterase from *Fusarium oxysporum* catalysing transesterification reactions in organic solvents. *Process biochemistry*, 33(7), 729-733.
- Conn, E.E., P.K Stumpf, G. Bruening and R.H. Doi, 1987. Outlines of Biochemistry. Pp: 115–64. 5th Ed. John Wiley and Sons, Inc. Singapore.
- Corti, A., Muniyasamy, S., Vitali, M., Imam, S. H., & Chiellini, E. (2010). Oxidation and biodegradation of polyethylene films containing pro-oxidant additives: Synergistic effects of sunlight exposure, thermal aging and fungal biodegradation. *Polymer Degradation and Stability*, 95(6), 1106-1114.
- Cosgrove, L., McGeechan, P. L., Robson, G. D., & Handley, P. S. (2007). Fungal communities associated with degradation of polyester polyurethane in soil. *Applied and environmental microbiology*, 73(18), 5817-5824.
- Costa-Orlandi, C. B., Sardi, J. C., Pitangui, N. S., De Oliveira, H. C., Scorzoni, L., Galeane, M. C., ... & Mendes-Giannini, M. J. S. (2017). Fungal biofilms and polymicrobial diseases. *Journal of Fungi*, 3(2), 22.
- CPCB (2019) *Central Pollution Control Board*. Ministry of Environment and Forests, Govt. of India, New Delhi, India.
- Crystal Thew, X. E., Lo, S. C., Ramanan, R. N., Tey, B. T., Huy, N. D., & Chien Wei, O. (2023). Enhancing plastic biodegradation process: strategies and opportunities. *Critical reviews in biotechnology*, 1-18.

- CSE (2020) Managing PW in India: challenges and Agenda. Retrieved from <https://www.cseindia.org/content/downloadreports/10352>
- Da Costa, J. P., Nunes, A. R., Santos, P. S., Girao, A. V., Duarte, A. C., & Rocha-Santos, T. (2018). Degradation of polyethylene microplastics in seawater: Insights into the environmental degradation of polymers. *Journal of Environmental Science and Health, Part A*, 53(9), 866-875.
- Das, M. P., & Kumar, S. (2014). Microbial deterioration of low-density polyethylene by *Aspergillus* and *Fusarium* sp. *Int J Chem Tech Res*, 6(1), 299-305.
- Das, M. P., and Kumar, S. (2015). An approach to low-density polyethylene biodegradation by *Bacillus amyloliquefaciens*. *3 Biotech* 5, 81–86. doi: 10.1007/s13205-014-0205-1
- Das, N., & Chandran, P. (2011). Microbial degradation of petroleum hydrocarbon contaminants: an overview. *Biotechnology research international*, 2011.
- de Oliveira, B. H., Coradi, G. V., de Oliva-Neto, P., & do Nascimento, V. M. G. (2020). Biocatalytic benefits of immobilized *Fusarium* sp.(GFC) lipase from solid state fermentation on free lipase from submerged fermentation. *Industrial Crops and Products*, 147, 112235.
- Denuncio P, Bastida R, Dassis M, Giardino G, Gerpe M. (2011). Plastic ingestion in *Franciscana dolphins*, *Pontoporia blainvilieei* (Gervais and d'Orbigny, 1844), from Argentina. *Mar Pollut Bull*.
- Devi, R. S., Kannan, V. R., Nivas, D., Kannan, K., Chandru, S., & Antony, A. R. (2015). Biodegradation of HDPE by *Aspergillus* spp. from marine ecosystem of Gulf of Mannar, India. *Marine pollution bulletin*, 96(1-2), 32-40.
- Devi, R. S., Kannan, V. R., Nivas, D., Kannan, K., Chandru, S., & Antony, A. R. (2015). Biodegradation of HDPE by *Aspergillus* spp. from marine ecosystem of Gulf of Mannar, India. *Marine pollution bulletin*, 96(1-2), 32-40.
- Ding, Z., Chen, Y., Xu, Z., Peng, L., Xu, G., Gu, Z., ... & Zhang, K. (2014). Production and characterization of laccase from *Pleurotus ferulae* in submerged fermentation. *Annals of microbiology*, 64(1), 121-129.
- Divya K. (2022, July 5) NCR Restos go eco-friendly with ban on single-use plastic, *The times of India*. (<https://timesofindia.indiatimes.com/city/delhi/ncr-restos-go-eco-friendly-with-ban-on-single-use-plastic/articleshow/92658655.cms>)
- Dolezel, B. (1967). Corrosion of plastic materials and rubbers. *Br J PlastSurg*, 49, 105-113.
- DSouza, G. C., Sheriff, R. S., Ullanat, V., Shrikrishna, A., Joshi, A. V., Hiremath, L., & Entoori, K. (2021). Fungal biodegradation of low-density polyethylene using consortium of *Aspergillus* species under controlled conditions. *Heliyon*, 7(5), e07008.

- DSouza, G. C., Sheriff, R. S., Ullanat, V., Shrikrishna, A., Joshi, A. V., Hiremath, L., & Entoori, K. (2021). Fungal biodegradation of low-density polyethylene using consortium of *Aspergillus* species under controlled conditions. *Heliyon*, 7(5).
- DSouza, G. C., Sheriff, R. S., Ullanat, V., Shrikrishna, A., Joshi, A. V., Hiremath, L., & Entoori, K. (2021). Fungal biodegradation of low-density polyethylene using consortium of *Aspergillus* species under controlled conditions. *Heliyon*, 7(5).
- Ehara, K., Iiyoshi, Y., Tsutsumi, Y., & Nishida, T. (2000). Polyethylene degradation by manganese peroxidase in the absence of hydrogen peroxide. *Journal of wood science*, 46, 180-183.
- Ellaiah, P., Srinivasulu, B., Adinarayana, K., "A review on microbial alkaline proteases," *J. Sci Ind Res*, 61, 690-704. 2002
- Elsamahy, T., Sun, J., Elsilk, S. E., & Ali, S. S. (2023). Biodegradation of low-density polyethylene plastic waste by a constructed tri-culture yeast consortium from wood-feeding termite: Degradation mechanism and pathway. *Journal of Hazardous Materials*, 448, 130944.
- El-Shafei, H. A., Abd El-Nasser, N. H., Kansoh, A. L., & Ali, A. M. (1998). Biodegradation of disposable polyethylene by fungi and *Streptomyces* species. *Polymer degradation and stability*, 62(2), 361-365.
- Esan, E.O., Abbey, L., Yurgel, S. (2019). Exploring the long-term effect of plastic on compost microbiome. *PloS One* 14 (3), e0214376.
- Esmaeili, A., Pourbabae, A. A., Alikhani, H. A., Shabani, F., & Esmaeili, E. (2013). Biodegradation of low-density polyethylene (LDPE) by mixed culture of *Lysinibacillus xylanilyticus* and *Aspergillus niger* in soil. *Plos one*, 8(9).
- Etcheverry, M., Chulze, S., & Dalcero, A. (1996). Influence of inoculum size on growth and aflatoxins accumulation. *Revista Iberoamericana De Micología*, 13(4), 101-106.
- Faiz, O., Colak, A., Saglam, N., Çanakçı, S., & Belduz, A. O. (2007). Determination and characterization of thermostable esterolytic activity from a novel thermophilic bacterium *Anoxybacillus gonensis* A4. *BMB Reports*, 40(4), 588-594.
- Falony, G., Armas, J. C., Mendoza, J. C. D., & Hernández, J. L. M. (2006). Production of Extracellular Lipase from *Aspergillus niger* by Solid-State Fermentation. *Food Technology & Biotechnology*, 44(2).
- Fu, D., Yu, M., Tan, T., & Zhou, X. (2009). Separation, characterization and catalytic properties of Lip2 isoforms from *Candida* sp. 99-125. *Journal of Molecular Catalysis B: Enzymatic*, 56(2-3), 115-121.

- Ganesh Kumar, A., Manisha, D., Sujitha, K., Magesh Peter, D., Kirubagaran, R., & Dharani, G. (2021). Genome sequence analysis of deep sea *Aspergillus sydowii* BOBA1 and effect of high pressure on biodegradation of spent engine oil. *Scientific Reports*, 11(1), 9347.
- Gao, R., Liu, R., & Sun, C. (2021). A marine fungus efficiently degrades polyethylene. *bioRxiv*, 2021-11.
- Gao, R., Liu, R., & Sun, C. (2022). A marine fungus *Alternaria alternata* FB1 efficiently degrades polyethylene. *Journal of Hazardous Materials*, 431, 128617
- García-Gómez, M. J., Huerta-Ochoa, S., Loera-Corral, O., & Prado-Barragán, L. A. (2009). Advantages of a proteolytic extract by *Aspergillus oryzae* from fish flour over a commercial proteolytic preparation. *Food chemistry*, 112(3), 604-608.
- Gavrilescu, M., & Chisti, Y. (2005). Biotechnology—a sustainable alternative for chemical industry. *Biotechnology advances*, 23(7-8), 471-499.
- Geldreich, E. E. (1972). Buffalo Lake recreational water quality: a study in bacteriological data interpretation. *Water Research*, 6(8), 913-924.
- Geweely, N. S., & Ouf, S. A. (2011). Enhancement of fungal degradation of starch based plastic polymer by laser-induced plasma. *African Journal of Microbiology Research*, 5(20), 3273-3281.
- Ghatge, S., Yang, Y., Ahn, J. H., & Hur, H. G. (2020). Biodegradation of polyethylene: a brief review. *Applied Biological Chemistry*, 63(1), 1-14.
- Gricajeva, A., Nadda, A. K., & Gudiukaitė, R. (2022). Insights into polyester plastic biodegradation by carboxyl ester hydrolases. *Journal of Chemical Technology & Biotechnology*, 97(2), 359-380.
- Griffen, A.M., Wiebe, M.G., Robson, G.D. and Trinci, A.P.J. Extracellular proteases produced by the Quorn myco-protein fungus *Fusarium graminearum* in batch and chemostat cultures. *Microbiology* 143 (1997) 3007–3013.
- Gulati, R., Isar, J., Kumar, V., Prasad, A. K., Parmar, V. S., & Saxena, R. K. (2005). Production of a novel alkaline lipase by *Fusarium globulosum* using neem oil, and its applications. *Pure and Applied Chemistry*, 77(1), 251-262.
- Gulmine, J. V., Janissek, P. R., Heise, H. M., & Akcelrud, L. (2003). Degradation profile of polyethylene after artificial accelerated weathering. *Polymer degradation and stability*, 79(3), 385-397.
- Hadar, Y., & Sivan, A. (2004). Colonization, biofilm formation and biodegradation of polyethylene by a strain of *Rhodococcus ruber*. *Applied microbiology and biotechnology*, 65, 97-104.

- Hasan, F., Shah, A. A., Hameed, A., & Ahmed, S. (2007). Synergistic effect of photo and chemical treatment on the rate of biodegradation of low density polyethylene by *Fusarium* sp. AF4. *Journal of applied polymer science*, 105(3), 1466-1470.
- Hazra, T., & Goel, S. (2009). Solid waste management in Kolkata, India: Practices and challenges. *Waste management*, 29(1), 470-478.
- Hinsken, H., Moss, S., Pauchet, J. and Zweifel, H. (1991) Degradation of Polyolefin during Melt Processing. *Polym Degrad Stab*, 34, 279-293.
- Ho, K. L. G., & Pometto III, A. L. (1999). Effects of electron-beam irradiation and ultraviolet light (365 nm) on polylactic acid plastic films. *Journal of environmental polymer degradation*, 7, 93-100.
- Hoornweg, D., Bhada-Tata, P., & Kennedy, C. (2015). Peak waste: When is it likely to occur?. *Journal of Industrial Ecology*, 19(1), 117-128.
- Hossain, S. M., & Anantharaman, N. (2006). Activity enhancement of ligninolytic enzymes of *Trametes versicolor* with bagasse powder. *African Journal of Biotechnology*, 5(2), 189-194.
- Hu, J., & Duvnjak, Z. (2004). Production of a laccase and decrease of the phenolic content in canola meal during the growth of the fungus *pleurotus ostreatus* in solid state fermentation processes. *Engineering in life sciences*, 4(1), 50-55.
- Hu, J., & Duvnjak, Z. (2004). Production of a laccase and decrease of the phenolic content in canola meal during the growth of the fungus *pleurotus ostreatus* in solid state fermentation processes. *Engineering in life sciences*, 4(1), 50-55.
- Hu, Q., Jayasinghe-Arachchige, V. M., & Prabhakar, R. (2021). Degradation of a main plastic pollutant polyethylene terephthalate by two distinct proteases (neprilysin and cutinase-like enzyme). *Journal of chemical information and modeling*, 61(2), 764-776.
- Huy, N. D., Tien, N. T. T., Huyen, L. T., Quang, H. T., Tung, T. Q., Luong, N. N., & Park, S. M. (2017). Screening and production of manganese peroxidase from *Fusarium* sp. on residue materials. *Mycobiology*, 45(1), 52-56.
- Iandolo, D., Piscitelli, A., Sannia, G., & Faraco, V. (2011). Enzyme production by solid substrate fermentation of *Pleurotus ostreatus* and *Trametes versicolor* on tomato pomace. *Applied biochemistry and biotechnology*, 163, 40-51.
- Iiyoshi, Y., Tsutsumi, Y., & Nishida, T. (1998). Polyethylene degradation by lignin-degrading fungi and manganese peroxidase. *Journal of wood science*, 44, 222-229.
- Ikram-Ul-haq, H. M., & Umber, H. (2006). Production of protease by *Penicillium chrysogenum* through optimization of environmental conditions. *Journal of Agriculture & Social Sciences*, 2(1), 23-25.

- Jen-hou L and Schwartz A. (1961). Zum Verhalten von bakteriengemischen gegenüber polyfithylen verschiedenen mittleren Molekulargewichts. *Kunststoffe* 51:317-320.
- Jeon, J. M., Park, S. J., Choi, T. R., Park, J. H., Yang, Y. H., & Yoon, J. J. (2021). Biodegradation of polyethylene and polypropylene by *Lysinibacillus* species JJY0216 isolated from soil grove. *Polymer Degradation and Stability*, 191, 109662.
- Johnson, K. E., Pometto III, A. L., & Nikolov, Z. L. (1993). Degradation of degradable starch-polyethylene plastics in a compost environment. *Applied and environmental microbiology*, 59(4), 1155-1161.
- K. E. Johnson, A. L. Pometto III, and Z. L. Nikolov (1993) *Appl. Environ. Microbiol.* 59, 1155-1161.
- Kale, S. K., Deshmukh, A. G., Dudhare, M. S., & Patil, V. B. (2015). Microbial degradation of plastic: a review. *Journal of Biochemical Technology*, 6(2), 952-961.
- Kamath, P., Subrahmanyam, V. M., Rao, J. V., & Raj, P. V. (2010). Optimization of cultural conditions for protease production by a fungal species. *Indian journal of pharmaceutical sciences*, 72(2), 161.
- Karamanlioglu, M., Preziosi, R., and Robson, G. D. (2017). The compostable plastic poly (lactic) acid causes a temporal shift in fungal communities in maturing compost. *Compost Sci. Util.* 25, 211–219. doi: 10.1080/1065657X.2016.1277808
- Kathiresan K. (2003). Polythene and Plastics-degrading microbes from the mangrove soil. *Rev Biol Trop* 51(3):629-634.
- Kaur, H., Kapoor, S., & Kaur, G. (2016). Application of ligninolytic potentials of a white-rot fungus *Ganoderma lucidum* for degradation of lindane. *Environmental Monitoring and Assessment*, 188, 1-10.
- Khan, S., Ali, S. A., & Ali, A. S. (2022). Biodegradation of low-density polyethylene (LDPE) by mesophilic fungus *Penicillium citrinum* isolated from soils of plastic waste dump yard, Bhopal, India. *Environmental Technology*, 1-15.
- Khan, S., Nadir, S., Shah, Z. U., Shah, A. A., Karunarathna, S. C., Xu, J., ... & Hasan, F. (2017). Biodegradation of polyester polyurethane by *Aspergillus tubingensis*. *Environmental pollution*, 225, 469-480.
- Khruengsai, S., Sripahco, T., & Pripdeevech, P. (2021). Low-density polyethylene film biodegradation potential by fungal species from Thailand. *Journal of Fungi*, 7(8), 594.
- Kim, S. H., Yun, U. H., & Kim, J. G. (2023). Low-Density Polyethylene Degradation and Energy Yield Using Dielectric Barrier Discharge under Various Electrical Conditions. *Energies*, 16(5), 2403.

- Kjeldsen P., Barlaz M. A., Rooker A. P., Baun A., Ledin A., Christensen T. H. (2002). Present and long-term composition of MSW landfill leachate: a review. *Critical reviews in environmental science and technology*, 32(4): 297-336.
- Kladnitskaya, G.V., Valueva, T.A., Domash, V.I., Novikova, L.N. and Mosolov, V.V. Exoproteinases of the fungus *Fusarium sambucinum* Fuck and their interaction with inhibitors. *Prikladnaya Biokhimiya i Mikrobiologiya* 30 (1994) 21–28.
- Klich, M. A., & United States. (2002). *Identification of common Aspergillus species*. Utrecht, Netherlands: Central bureau voor Schimmel cultures.
- Komal, P. and Himani, P. (2014). Status of Solid Waste In The City Of Vadodara. *International Journal Of Darshan Institute On Engineering Research & Emerging Technologies*, 3 (1), 24-28.
- Konduri, M. K. R., Anupam, K. S., Vivek, J. S., Kumar, D. B. R. & Narasu, M. L. Synergistic effect of chemical and photo treatment on the rate of biodegradation of high-density polyethylene by indigenous fungal isolates. *International Journal of Biotechnology and Biochemistry* 6, 157–174 (2010).
- Konduri, M. K. R., Anupam, K. S., Vivek, J. S., Kumar, D. B. R. & Narasu, M. L. (2010). Synergistic effect of chemical and photo treatment on the rate of biodegradation of high density polyethylene by indigenous fungal isolates. *International Journal of Biotechnology and Biochemistry* 6, 157–174.
- Konduri, M. K., Anupam, K. S., Vivek, J. S., DB, R. K., & Narasu, M. L. (2010). Synergistic effect of chemical and photo treatment on the rate of biodegradation of high density polyethylene by indigenous fungal isolates. *International Journal of Biotechnology & Biochemistry*, 6(2), 157-175.
- Konduri, M. K., Koteswarareddy, G., Rohini Kumar, D. B., Venkata Reddy, B., & Lakshmi Narasu, M. (2011). Effect of pro-oxidants on biodegradation of polyethylene (LDPE) by indigenous fungal isolate, *Aspergillus oryzae*. *Journal of Applied Polymer Science*, 120(6), 3536-3545.
- Kováts, N., Hubai, K., Sainnokhoi, T. A., Eck-Varanka, B., Hoffer, A., Tóth, Á., ... & Teke, G. (2022). Ecotoxic emissions generated by illegal burning of household waste. *Chemosphere*, 298, 134263.
- Kumar S., Das M., L. Rebecca J., Sharmila S. (2013). Isolation and identification of LDPE degrading fungi from municipal solid waste. *J Chem Pharm Res* 5(3):78-81.
- Kumar, K. N., & Goel, S. (2009). Characterization of municipal solid waste (MSW) and a proposed management plan for Kharagpur, West Bengal, India. *Resources, Conservation and Recycling*, 53(3), 166-174.

- Kumar, R., Pandit, P., Kumar, D., Patel, Z., Pandya, L., Kumar, M., ... & Joshi, M. (2021). Landfill microbiome harbour plastic degrading genes: A metagenomic study of solid waste dumping site of Gujarat, India. *Science of The Total Environment*, 779, 146184.
- Kumar, V. P., Shrinivasulu, K., & Kalpana, P. (2008). Partial Purification and Optimization of Alkaline Protease from Bacterial ncim 2724 Species by Solid State Fermentation. *Biomedical & Pharmacology Journal*, 1(2), 387.
- Kumar, V.V., Sathyaselvabala, V., Premkumar, M.P., Vidyadevi, T., Sivanesan, S. (2012). Biochemical characterization of three phase partitioned laccase and its application in decolorization and degradation of synthetic dyes. *Journal of Molecular Catalysis B: Enzymatic*, 74: 63–72.
- Kumari, B. L., Vijetha, P., & Sudhakar, P. (2010). Optimization of physico-chemical properties for production of alkaline protease from *Fusarium graminearum*. *Recent research in Science and technology*, 2(4).
- Kunlere, I. O., Fagade, O. E., & Nwadike, B. I. (2019). Biodegradation of low density polyethylene (LDPE) by certain indigenous bacteria and fungi. *International Journal of Environmental Studies*, 76(3), 428-440.
- Kyaw, B. M., Champakalakshmi, R., Sakharkar, M. K., Lim, C. S., & Sakharkar, K. R. (2012). Biodegradation of low density polythene (LDPE) by *Pseudomonas* species. *Indian journal of microbiology*, 52, 411-419.
- Lee, B., Pometto III, A. L., Fratzke, A., & Bailey Jr, T. B. (1991). Biodegradation of degradable plastic polyethylene by *Phanerochaete* and *Streptomyces* species. *Applied and Environmental Microbiology*, 57(3), 678-685.
- Lei, L., Wang, S., Lin, Y., Liu, W., Chi, T., 2015. A covering model application on Chinese industrial hazardous waste management based on integer program method. *Ecol. Indic.* 51, 237-243.
- Leja K. and Lewandowicz G. (2010). Polymer Biodegradation and Biodegradable. *Pol J Environ Stud* 19 (2):255-66.
- Li, L., Li, X.Z., Tang, W.Z., Zhao, J., Qu, Y.B., 2008. Screening of a fungus capable of powerful and selective delignification on wheat straw. *Letters in Applied Microbiology* 47, 415e420
- Lima, V. M., Krieger, N., Sarquis, M. I. M., Mitchell, D. A., Ramos, L. P., & Fontana, J. D. (2003). Effect of nitrogen and carbon sources on lipase production by *Penicillium aurantiogriseum*. *Food Technology and Biotechnology*, 41(2), 105-110.
- Liu, Y., Xu, H., Yan, Q., Yang, S., Duan, X., & Jiang, Z. (2013). Biochemical characterization of a first fungal esterase from *Rhizomucor miehei* showing high efficiency of ester synthesis. *PLoS One*, 8(10), e77856.

- Loredo-Treviño, A., García, G., Velasco-Téllez, A., Rodríguez-Herrera, R., & Aguilar, C. N. (2011). Polyurethane foam as substrate for fungal strains. *Advances in Bioscience and Biotechnology*, 2(2), 52.
- Luisa M, Goncalves FC, Steiner W (1996). Purification and characterisation of laccase from a newly isolated wood-decaying fungus: Enzymes for Pulp and Paper Processing. Ame. Chem. Soc. 20: 258-263.
- Luo, Z. H., Wu, Y. R., Chow, R. K. K., Luo, J. J., Gu, J. D., & Vrijmoed, L. L. P. (2012). Purification and characterization of an intracellular esterase from a *Fusarium* species capable of degrading dimethyl terephthalate. *Process Biochemistry*, 47(5), 687-693.
- Ma, A., & Wong, Q. (2013). Identification of esterase in *Aspergillus flavus* during degradation of polyester polyurethane. *Canadian Young Scientist Journal*, 2013(2), 24-31.
- Mac Faddin, J. F., (1980). Biochemical tests for identification of medical bacteria. The Williams and Wilkins Co., Baltimore, U.S.A. Edn. 2nd.
- Mahadik, N. D., Puntambekar, U. S., Bastawde, K. B., Khire, J. M., & Gokhale, D. V. (2002). Production of acidic lipase by *Aspergillus niger* in solid state fermentation. *Process biochemistry*, 38(5), 715-721.
- Mahalakshmi, V., Siddiq, A., & Andrew, S. N. (2012). Analysis of polyethylene degrading potentials of microorganisms isolated from compost soil. *International journal of pharmaceutical & biological archives*, 3(5), 1190-1196.
- Mahmoud, G. A., Koutb, M. M., Morsy, F. M., & Bagy, M. M. (2015). Characterization of lipase enzyme produced by hydrocarbons utilizing fungus *Aspergillus terreus*. *European Journal of Biological Research*, 5(3), 70-77.
- Maia, M. M. D., Heasley, A., De Morais, M. C., Melo, E. H. M., Morais Jr, M. A., Ledingham, W. M., & Lima Filho, J. L. (2001). Effect of culture conditions on lipase production by *Fusarium solani* in batch fermentation. *Bioresource technology*, 76(1), 23-27.
- Manco, G., DI GENNARO, S., DE ROSA, M., & Rossi, M. (1994). Purification and characterization of a thermostable carboxylesterase from the thermoacidophilic eubacterium *Bacillus acidocaldarius*. *European journal of biochemistry*, 221(3), 965-972.
- Masse, L., Kennedy, K. J., & Chou, S. P. (2001). The effect of an enzymatic pretreatment on the hydrolysis and size reduction of fat particles in slaughterhouse wastewater. *Journal of Chemical Technology & Biotechnology: International Research in Process, Environmental & Clean Technology*, 76(6), 629-635.
- Mathur, G., & Prasad, R. (2012). Degradation of polyurethane by *Aspergillus flavus* (ITCC 6051) isolated from soil. *Applied biochemistry and biotechnology*, 167(6), 1595-1602.

- Mathur, G., Mathur, A., & Prasad, R. (2011). Colonization and degradation of thermally oxidized high-density polyethylene by *Aspergillus niger* (ITCC No. 6052) isolated from plastic waste dumpsite. *Bioremediation journal*, 15(2), 69-76.
- McKay, A.M. Production of an alkaline protease by *Fusarium graminearum* grown on whey. *Milchwissenschaft* 47 (1992) 147–148
- Mehta, K. P., & Pandey, M. H. (2014). Status of solid waste in the City of Vadodara. International Journal of Darshan Institute on Engineering Research and Emerging Technologies, 3(1), 24-28.
- Meinel, G., & Peterlin, A. (1968). Fuming nitric acid treatment of polyethylene. IV. Morphology of drawn polyethylene. *Journal of Polymer Science Part A-2: Polymer Physics*, 6(3), 587-605.
- Mewada, M., Albert, S., & Padhiar, A. (2020). Municipal Solid Waste Management System in Vadodara City: Current Scenario. IOSR Journal of Environmental Science, Toxicology and Food Technology, 14(2), 45-50.
- Mewada, M., Albert, S., & Pandya, B. (2017). Enhancement of ligninolytic & xylanolytic enzyme activities in *Trichoderma reesei* co-cultured with two white rot fungi. *Int. J. Biotechnol. Biochem*, 13, 429-439.
- Moss, S. and Zweifel, H. (1989) Degradation and Stabilization of High Density Polyethylene during Multiple Extrusions. *Polymer Degradation and Stability*, 25, 217-245.
- Muhonja, C. N., Makonde, H., Magoma, G., & Imbuga, M. (2018). Biodegradability of polyethylene by bacteria and fungi from Dandora dumpsite Nairobi-Kenya. *PloS one*, 13(7), e0198446.
- Munir, E., Harefa, R. S. M., Priyani, N., & Suryanto, D. (2018, March). Plastic degrading fungi *Trichoderma viride* and *Aspergillus nomius* isolated from local landfill soil in Medan. In *IOP Conference Series: Earth and Environmental Science* (Vol. 126, No. 1, p. 012145). IOP Publishing.
- Nagamani, A., Kunwar, I. K., & Manoharachary, C. (2006). *Handbook of soil fungi*. IK international.
- Nakae, M., Uehara, H., Kanamoto, T., Zachariades, A. E., & Porter, R. S. (2000). Structure development upon melt drawing of ultrahigh molecular weight polyethylene: Effect of prior thermal history. *Macromolecules*, 33(7), 2632-2641.
- Nawani, N., Singh, R., & Kaur, J. (2006). Immobilization and stability studies of a lipase from thermophilic *Bacillus* sp: The effect of process parameters on immobilization of enzyme. *Electronic Journal of Biotechnology*, 9(5), 0-0.
- Nidhi, K. V., Varsha, B. S., Prajwal, M., Sai, P. S. G., Ananda, H. V., & Prakruthi, G. (2020). A biotechnological approach on screening and production of manganese peroxidase by

- Fusarium* sp. from areca nut husk. *European Journal of Pharmaceutical and Medical Research*, 7, 310-314.
- Niladevi, K. N., Sukumaran, R. K., & Prema, P. (2007). Utilization of rice straw for laccase production by *Streptomyces psammoticus* in solid-state fermentation. *Journal of Industrial Microbiology and Biotechnology*, 34(10), 665-674.
- Niu, L., Chen, Y., Li, Y., Wang, Y., Shen, J., Wang, L., ... & Zhao, B. (2023). Diversity, abundance and distribution characteristics of potential polyethylene and polypropylene microplastic degradation bacterial communities in the urban river. *Water Research*, 232, 119704.
- Nwachukwu, S., Obidi, O., & Odoch, C. (2010). Occurrence and recalcitrance of polyethylene bag waste in Nigerian soils. *African Journal of Biotechnology*, 9(37), 6096-6104.
- Nwuzor, I. C., Oyeoka, H. C., Nwanonenyi, S. C., & Ihekweme, G. O. (2023). Biodegradation of low-density polyethylene film/plasticized cassava starch blends with central composite design for optimal environmental pollution control. *Journal of Hazardous Materials Advances*, 9, 100251.
- Ojha, N., Pradhan, N., Singh, S., Barla, A., Shrivastava, A., Khatua, P. & Bose, S. (2017). Evaluation of HDPE and LDPE degradation by fungus, implemented by statistical optimization. *Scientific Reports*, 7(1), 1-13.
- Orhan Y, Hrenovic J & Buyukgungor H. (2004). Biodegradation of Plastic Compost Bags Under Controlled soil condition. *Acta Chim Slov* 51:579–588.
- Otake, Y., Kobayashi, T., Asabe, H., Murakami, N., & Ono, K. (1995). Biodegradation of low-density polyethylene, polystyrene, polyvinyl chloride, and urea formaldehyde resin buried under soil for over 32 years. *Journal of Applied Polymer Science*, 56(13), 1789-1796.
- Oviedo-Anchundia, R., del Castillo, D. S., Naranjo-MorÃ, J., Francois, N., AlarcÃ³n, A., Villafuerte, J. S., & Barcos-Arias, M. (2021). Analysis of the degradation of polyethylene, polystyrene and polyurethane mediated by three filamentous fungi isolated from the Antarctica. *African Journal of Biotechnology*, 20(2), 66-76.
- Ozsagiroglu, E., Iyisan, B., & Guvenilir, Y. A. (2012). Biodegradation and characterization studies of different kinds of polyurethanes with several enzyme solutions. *Polish Journal of Environmental Studies*, 21(6), 1777-1782.
- Paranthaman, R., Alagusundaram, K. and Indhumathi, J., “Production of protease from rice mill wastes by *Aspergillus niger* in solid state fermentation,” *World J. Agri Sci*, 5, 308-312. 2009.
- Park, J. J., & Chu, F. S. (1996). Partial purification and characterization of an esterase from *Fusarium sporotrichioides*. *Natural Toxins*, 4(3), 108-116.

- Patel, H., Gupte, A., & Gupte, S. (2009). Effect of different culture conditions and inducers on production of laccase by a basidiomycete fungal isolate *Pleurotus ostreatus* HP-1 under solid state fermentation. *BioResources*, 4(1).
- Pathak, G., Nichter, M., Hardon, A., Moyer, E., Latkar, A., Simbaya, J., ... & Love, J. (2023). Plastic pollution and the open burning of plastic wastes. *Global Environmental Change*, 80, 102648.
- Pathak, V. M., & Kumar, N. (2017). Dataset on the impact of UV, nitric acid and surfactant treatments on low-density polyethylene biodegradation. *Data in brief*, 14, 393-411.
- Patrick, F., Mtui, G., Mshandete, A. M., Johansson, G., & Kivaisi, A. (2009). Purification and characterization of a laccase from the basidiomycete *Funalia trogii* (Berk.) isolated in Tanzania. *African Journal of Biochemistry Research*, 3(5), 250-258.
- Pedersen, A. J., Frandsen, F. J., Riber, C., Astrup, T., Thomsen, S. N., Lundtorp, K., & Mortensen, L. F. (2009). A Full-scale Study on the Partitioning of Trace Elements in Municipal Solid Waste Incineration—Effects of Firing Different Waste Types †. *Energy & Fuels*, 23(7), 3475–3489. <https://doi.org/10.1021/EF801030P>
- Perdani, M. S., Margaretha, G., Sahlan, M., & Hermansyah, H. (2020). Solid state fermentation method for production of laccase enzyme with bagasse, cornstalk and rice husk as substrates for adrenaline biosensor. *Energy Reports*, 6, 336-340.
- Potts, J.E. 1978. Biodegradation. In: Aspects of degradation and stabilization of polymers. (Jellinek, H.H.G., ed.), pp. 617-658, Elsevier, New York.
- Prabhakar T, Bhogavalli PK, Vallem PR, Venkateswar S. Studies on optimization of extracellular lipase from potential fungal strain(s) isolated from oil contaminated soil. *J. Microbiol. Biotech. Res.*, 2012;2(3):418-425.
- Pramila R. and Vijaya Ramesh K. (2011). Biodegradation of low density polyethylene (LDPE) by fungi isolated from municipal landfill area. *J Microbiol Biotech Res* 1(4):131- 136.
- Prazeres, J. N. D., Cruz, J. A. B., & Pastore, G. M. (2006). Characterization of alkaline lipase from *Fusarium oxysporum* and the effect of different surfactants and detergents on the enzyme activity. *Brazilian Journal of Microbiology*, 37, 505-509.
- PTI (2023, January 12) India recycles only 30 per cent of 3.4 MT plastic waste generated annually: Report, *The Economic Times*. <https://economictimes.indiatimes.com/news/india/india-recycles-only-30-per-cent-of-3-4-mt-plastic-waste-generated-annually-report/articleshow/96918352.cms>
- Qi-He, C., Krügener, S., Hirth, T., Rupp, S., & Zibek, S. (2011). Co-cultured production of lignin-modifying enzymes with white-rot fungi. *Applied biochemistry and biotechnology*, 165, 700-718.

- Raghavendra, V. B., Uzma, M., & Govindappa, M. (2016). low density polyethylene (LDPE) degrading soil fungi isolate 34761. *Key words.*
- Rajandas, H., Parimannan, S., Sathasivam, K., Ravichandran, M., & Yin, L. S. (2012). A novel FTIR-ATR spectroscopy based technique for the estimation of low-density polyethylene biodegradation. *Polymer Testing*, 31(8), 1094-1099.
- Ramachandran S, Patel AK, Nampoothiri KM, FrancisF , Nagy V, Szakacs G, Pandey A. Coconut oil cake—a potential raw material for the production of amylase. *Biores Technol*. 2004; 93: 169–174.
- Ramnath, L., Sithole, B., & Govinden, R. (2017). Classification of lipolytic enzymes and their biotechnological applications in the pulping industry. *Canadian journal of microbiology*, 63(3), 179-192.
- Rana, A. K., Thakur, M. K., Saini, A. K., Mokhta, S. K., Moradi, O., Rydzkowski, T., ... & Thakur, V. K. (2022). Recent developments in microbial degradation of polypropylene: Integrated approaches towards a sustainable environment. *Science of the Total Environment*, 826, 154056.
- Rani, A., Singh, P., & Kumar, R. (2020). Microbial deterioration of high-density polyethylene by selected microorganisms. *Journal of Applied Biology and Biotechnology*, 8(6), 64-66.
- Rapp, P. (1995). Production, regulation, and some properties of lipase activity from *Fusarium oxysporum* f. sp. *vasinfectum*. *Enzyme and Microbial Technology*, 17(9), 832-838.
- Rouba, N., Sadoun, T., Boutagabat, N., Kerrouche, D., Zadi, S., & Mimi, N. (2015). Thermo-oxidation and biodegradation study of low-density polyethylene/starch films by IR spectroscopy. *Iranian Journal of Chemistry and Chemical Engineering (IJCCE)*, 34(4), 69-78.
- Russell, J. R., Huang, J., Anand, P., Kucera, K., Sandoval, A. G., Dantzler, K. W., ... & Strobel, S. A. (2011). Biodegradation of polyester polyurethane by endophytic fungi. *Applied and environmental microbiology*, 77(17), 6076-6084.
- Rutkowska M., Heimowska A., Krasowska K., Janik H. (2002). Biodegradability of Polyethylene Starch Blends in Sea Water. *Pol J Environ Stud* 11:267-274.
- Sahu, C., & Mishra, S. (2022). Public perception on municipal solid waste management: a case of India. *International Journal of Environmental Science and Technology*, 1-14.
- Samat, A. F., Carter, D., & Abbas, A. (2023). Biodeterioration of pre-treated polypropylene by *Aspergillus terreus* and *Engyodontium album*. *npj Materials Degradation*, 7(1), 28.
- Sangale, M. K., Shahnawaz, M., & Ade, A. B. (2019). Potential of fungi isolated from the dumping sites mangrove rhizosphere soil to degrade polythene. *Scientific Reports*, 9(1), 1-11.

- Santacruz-Juárez, E., Buendia-Corona, R. E., Ramírez, R. E., & Sánchez, C. (2021). Fungal enzymes for the degradation of polyethylene: Molecular docking simulation and biodegradation pathway proposal. *Journal of Hazardous Materials*, 411, 125118.
- Santo, M., Weitsman, R., & Sivan, A. (2013). The role of the copper-binding enzyme—laccase—in the biodegradation of polyethylene by the actinomycete *Rhodococcus ruber*. *International Biodeterioration & Biodegradation*, 84, 204-210.
- Satlewal, A., Soni, R., Zaidi, M. G. H., Shouche, Y., & Goel, R. (2008). Comparative biodegradation of HDPE and LDPE using an indigenously developed microbial consortium. *J Microbiol Biotechnol*, 18(3), 477-482.
- Saxena, A., Jain, S., & Pareek, A. (2022). Estimation of possible biodegradation of polythene by fungal isolates growing on polythene debris. *Pollution*, 8(2), 567-577.
- Sayali, K., Sadichha, P., & Surekha, S. (2013). Microbial esterases: an overview. *Int. J. Curr. Microbiol. Appl. Sci*, 2(7), 135-146.
- Secchi E.R. and Zarzur S. (1999). Plastic debris ingested by a Blainville's beaked whale, Mesoplodon densirostris, washed ashore in Brazil. *Aquat Mamm* 25: 21-24.
- Sehgal, J., Asha, B. M., Vardhan, A., & Siddalingeshwara, K. G. (2020). An Approach on Screening, Production and Characterization of Laccase from Fusarium. *Journal of Current Pharma Research*, 10(2), 3673-3679.
- Sen, S. K., & Raut, S. (2015). Microbial degradation of low-density polyethylene (LDPE): a review. *Journal of Environmental Chemical Engineering*, 3(1), 462-473.
- Seneviratne G., Tennkoon N. S., Weerasekara M L M A W & Nandasena K. A. (2006). Polythene biodegradation by a developed Penicillium- Bacillus biofilm. *Curr Sci* 90: 20-21.
- Shah, A. A., Hasan, F., Hameed, A., & Ahmed, S. (2008). Biological degradation of plastics: a comprehensive review. *Biotechnology advances*, 26(3), 246-265.
- Shanker, R., Khan, D., Hossain, R., Islam, M. T., Locock, K., Ghose, A., ... & Dhodapkar, R. (2022). Plastic waste recycling: existing Indian scenario and future opportunities. *International Journal of Environmental Science and Technology*, 1-18.
- Sharholy, M., Ahmad, K., Mahmood, G., & Trivedi, R. C. (2008). Municipal solid waste management in Indian cities—A review. *Waste management*. 28(2) : 459-467.
- Sharholy, M., Ahmad, K., Vaishya, R. C., & Gupta, R. D. (2007). Municipal solid waste characteristics and management in Allahabad, India. *Waste management*, 27(4), 490-496.
- Sharma, O.P., K.D. Sharma and K. Nath, 1980. Production of proteolytic enzyme by fungi. *Rev. Roum. Biochem.*, 17: 209–15.

- Shi, K.; Jing, J.; Song, L.; Su, T.; Wang, Z. Enzymatic hydrolysis of polyester: Degradation of poly (ϵ -caprolactone) by *Candida antarctica* lipase and *Fusarium solani* cutinase. *Int. J. Biol. Macromol.* 2020, 144, 183–189.
- Shulter, M. L., & Kargi, F. (2000). Bioprocess engineering basic concept. *New Delhi: Parentice-Hall of India Pvt Ltd.*
- Singh, A.K., Mukhopadhyay, M. Overview of fungal lipase: A review. *Appl. Biochem. Biotechnol.* 2012, 166, 486–520
- Singh, J., & Gupta, K. (2014). Screening and identification of low density polyethylene (LDPE) degrading soil fungi isolated from polythene polluted sites around Gwalior City (MP). *Int. J. Curr. Microbiol. App. Sci.*, 3(6), 443-448.
- Sivan, A. (2011). New perspectives in plastic biodegradation. *Current opinion in biotechnology*, 22(3), 422-426.
- Skariyachan, S., Manjunatha, V., Sultana, S., Jois, C., Bai, V., & Vasist, K. S. (2016). Novel bacterial consortia isolated from plastic garbage processing areas demonstrated enhanced degradation for low density polyethylene. *Environmental Science and Pollution Research*, 23, 18307-18319.
- Skariyachan, S., Megha, M., Kini, M. N., Mukund, K. M., Rizvi, A., & Vasist, K. (2015). Selection and screening of microbial consortia for efficient and ecofriendly degradation of plastic garbage collected from urban and rural areas of Bangalore, India. *Environmental monitoring and assessment*, 187, 1-14.
- Solcany, V. E. R. O. N. I. K. A., Vrsanska, M. A. R. T. I. N. A., & Voberkova, S. T. A. N. I. S. L. A. V. A. (2016, November). Optimization of the procedure for a ligninolytic enzymes isolation from the white rot fungi. In *Proceedings of the International phD Students Conference (Mendelnet 2016), Brno, Czech Republic* (pp. 9-10).
- Souza, P. M. D., Bittencourt, M. L. D. A., Caprara, C. C., Freitas, M. D., Almeida, R. P. C. D., Silveira, D., ... & Magalhães, P. O. (2015). A biotechnology perspective of fungal proteases. *Brazilian Journal of Microbiology*, 46, 337-346.
- Sowmya, H. V., Krishnappa, M., & Thippeswamy, B. (2014). Degradation of polyethylene by *Trichoderma harzianum*—SEM, FTIR, and NMR analyses. *Environmental monitoring and assessment*, 186(10), 6577-6586.
- Sowmya, H. V., Ramalingappa, B., Nayanashree, G., Thippeswamy, B., & Krishnappa, M. (2015). Polyethylene degradation by fungal consortium. *International Journal of Environmental Research*, 9(3), 823-830.

- Spear L.B, Ainley D.G, Ribic C.A. (1995). Incidence of plastic in seabirds from the tropical pacific 1984-1991: Relation with distribution of species, sex, age, season, year and body weight. *Mar Environ Res* 40:123-146.
- Spina, F., Tummino, M. L., Poli, A., Prigione, V., Ilieva, V., Cocconcelli, P., ... & Varese, G. C. (2021). Low density polyethylene degradation by filamentous fungi. *Environmental Pollution*, 274, 116548.
- Stacey, R. J., Dyer, J., Mussell, C., Lluveras-Tenorio, A., Colombini, M. P., Duce, C., ... & Schilling, M. (2018). Ancient encaustic: An experimental exploration of technology, ageing behaviour and approaches to analytical investigation. *Microchemical Journal*, 138, 472-487.
- Stuart, B. (2000). Infrared spectroscopy. *Kirk-Othmer Encyclopedia of Chemical Technology*.
- Suresh, B., Maruthamuthu, S., Khare, A., Palanisamy, N., Muralidharan, V. S., Ragunathan, R., ... & Pandiyaraj, K. N. (2011). Influence of thermal oxidation on surface and thermo-mechanical properties of polyethylene. *Journal of Polymer Research*, 18, 2175-2184.
- Taghavi, N., Zhuang, W. Q., & Baroutian, S. (2021). Enhanced biodegradation of non-biodegradable plastics by UV radiation: Part 1. *Journal of Environmental Chemical Engineering*, 9(6), 106464.
- Tahir, L., Ali, M. I., Zia, M., Atiq, N., Hasan, F., & Ahmed, S. (2013). Production and Characterization of Esterase in *Lantinus tigrinus* for Degradation of Polystyrene. *Pol. J. Microbiol*, 62(1), 101-108.
- Talyan, V., Dahiya, R. P., & Sreekrishnan, T. R. (2008). State of municipal solid waste management in Delhi, the capital of India. *Waste Management*, 28(7), 1276-1287.
- Taxeidis, G., Nikolaivits, E., Siaperas, R., Gkountela, C., Vouyiouka, S., Pantelic, B., ... & Topakas, E. (2023). Triggering and identifying the polyurethane and polyethylene-degrading machinery of filamentous fungi secretomes. *Environmental Pollution*, 325, 121460.
- Téllez-Téllez, M., Fernández, F. J., Montiel-González, A. M., Sánchez, C., & Díaz-Godínez, G. (2008). Growth and laccase production by *Pleurotus ostreatus* in submerged and solid-state fermentation. *Applied microbiology and biotechnology*, 81, 675-679.
- Temporiti, M. E. E., Nicola, L., Nielsen, E., & Tosi, S. (2022). Fungal enzymes involved in plastics biodegradation. *Microorganisms*, 10(6), 1180.
- Thandavamoorthy, T.S., 2016. Wood waste as coarse aggregate in the production of concrete. *Eur. J. Environ. Civil Eng.* 20, 125-141.
- Tiso, T., Winter, B., Wei, R., Hee, J., de Witt, J., Wierckx, N., ... & Blank, L. M. (2022). The metabolic potential of plastics as biotechnological carbon sources—review and targets for the future. *Metabolic engineering*, 71, 77-98.

- Tiwari D. C., Ahmad E. & Kumar Singh K. (2009). Catalytic degradation of waste plastic into fuel range hydrocarbons. *Int J Chem Res* 1(2):31-36.
- Tokiwa, Y., Calabia, B. P., Ugwu, C. U., & Aiba, S. (2009). Biodegradability of plastics. *International journal of molecular sciences*, 10(9), 3722-3742.
- Tokiwa, Y., Calabia, B. P., Ugwu, C. U., & Aiba, S. (2009). Biodegradability of plastics. *International journal of molecular sciences*, 10(9), 3722-3742.
- Tribedi, P., & Sil, A. K. (2013). Low-density polyethylene degradation by *Pseudomonas* sp. AKS2 biofilm. *Environmental Science and Pollution Research*, 20, 4146-4153.
- Tribedi, P., Sarkar, S., Mukherjee, K., & Sil, A. K. (2012). Isolation of a novel *Pseudomonas* sp from soil that can efficiently degrade polyethylene succinate. *Environmental Science and Pollution Research*, 19(6), 2115-2124.
- Tunga, R., Banerjee, R., & Bhattacharya, B. C. (1999). Some studies on optimization of extraction process for protease production in SSF. *Bioprocess Engineering*, 20, 485-489.
- Tunga, R.B., 1995. Influence of Temperature on Enzyme Production. Tech. M. Thesis, II. T. Kharagpur, India.
- Ueda S., Y. Fujio and J.Y. Lim. (1982). Production and some properties of pectic enzymes from *Aspergillus oryzae* A-3. *J. App. Biochem.* 4: 524–532
- Umamaheswari, S., & Murali, M. (2013). FTIR spectroscopic study of fungal degradation of poly (ethylene terephthalate) and polystyrene foam. *Chem. Eng.* 64(19), 159.
- Unnikrishnan, S., & Singh, A. (2010). Energy recovery in solid waste management through CDM in India and other countries. *Resources, Conservation and Recycling*, 54(10), 630-640.
- Urbanek, H. and Yirdaw, G. (1978). Acid proteases produced by *Fusarium* species in cultures and in infected seedlings. *Physiological Plant Pathology* 13, 81–87.
- Usha R., Sangeetha T., Palaniswamy M. (2011). Screening of Polyethylene Degrading Microorganisms from Garbage Soil. *Libyan Agric Res Cen J Intl* 2(4):200-204.
- Uyar, F., & Baysal, Z. (2004). Production and optimization of process parameters for alkaline protease production by a newly isolated *Bacillus* sp. under solid state fermentation. *Process Biochemistry*, 39(12), 1893-1898.
- Velis, C. A., & Cook, E. (2021). Mismanagement of plastic waste through open burning with emphasis on the global south: a systematic review of risks to occupational and public health. *Environmental Science & Technology*, 55(11), 7186-7207.
- Verma, N., & Gupta, S. (2019). Assessment of LDPE degrading potential *Aspergillus* species isolated from municipal landfill sites of Agra. *SN Applied Sciences*, 1(7), 1-10.

- Verma, R., Vinoda, K. S., Papireddy, M., & Gowda, A. N. S. (2016). Toxic pollutants from plastic waste-a review. *Procedia Environmental Sciences*, 35, 701-708.
- Vij, D. (2012). Urbanization and solid waste management in India: present practices and future challenges. *Procedia-Social and Behavioral Sciences*, 37, 437-447.
- Vijayaraghavan, P., & Vincent, S. G. P. (2013). A simple method for the detection of protease activity on agar plates using bromocresolgreen dye. *Journal of Biochemical Technology*, 4(3), 628-630.
- Vivekanand, V., Dwivedi, P., Pareek, N., & Singh, R. P. (2011). Banana peel: a potential substrate for laccase production by *Aspergillus fumigatus* VkJ2. 4.5 in solid-state fermentation. *Applied biochemistry and biotechnology*, 165, 204-220.
- Vyas, B. R. M., Volc, J. and SASEK, V., 1994. Effects of temperature on the production of manganese peroxidase and lignin peroxidase by *Phanerochaete chrysosporium*. *Folia Microbiol.*, 39, 19–22.
- Wang, H., Chen, S., & Zhang, J. (2009). Surface treatment of LLDPE and LDPE blends by nitric acid, sulfuric acid, and chromic acid etching. *Colloid and Polymer Science*, 287, 541-548.
- Wiedner, K., Polifka, S. (2020). Effects of microplastic and microglass particles on soil microbial community structure in an arable soil (Chernozem). *Soils* 6 (2), 315e324.
- Wróbel, M., Szymańska, S., Kowalkowski, T., & Hrynkiewicz, K. (2023). Selection of microorganisms capable of polyethylene (PE) and polypropylene (PP) degradation. *Microbiological Research*, 267, 127251.
- Wu, Y. R., Luo, Z. H., & Vrijmoed, L. L. P. (2010). Biodegradation of anthracene and benz [a] anthracene by two *Fusarium solani* strains isolated from mangrove sediments. *Bioresource technology*, 101(24), 9666-9672.
- Yamada-Onodera, K., Mukumoto, H., Katsuyaya, Y., Saiganji, A., & Tani, Y. (2001). Degradation of polyethylene by a fungus, *Penicillium simplicissimum* YK. *Polymer degradation and stability*, 72(2), 323-327.
- Yamamoto-Tamura, K., Hiradate, S., Watanabe, T., Koitabashi, M., Sameshima-Yamashita, Y., Yarimizu, T., & Kitamoto, H. (2015). Contribution of soil esterase to biodegradation of aliphatic polyester agricultural mulch film in cultivated soils. *AMB Express*, 5, 1-8.
- Yao, C., Xia, W., Dou, M., Du, Y., & Wu, J. (2022). Oxidative degradation of UV-irradiated polyethylene by laccase-mediator system. *Journal of Hazardous Materials*, 440, 129709.
- Zadrazil, F., Gonser, A., & Lang, E. (1999, July). Influence of incubation temperature on the secretion of extracellular ligninolytic enzymes of *Pleurotus* sp. and *Dichomitus squalens* into soil.

In *Proceedings of the conference on enzymes in the environment: activity, ecology and applicants* (Vol. 12).

Zahra, S., Abbas, S. S., Mahsa, M. T., & Mohsen, N. (2010). Biodegradation of low-density polyethylene (LDPE) by isolated fungi in solid waste medium. *Waste management*, 30(3), 396-401.

Zhang, Y., Lin, Y., Gou, H., Feng, X., Zhang, X., & Yang, L. (2022). Screening of polyethylene-degrading bacteria from *rhyzopertha dominica* and evaluation of its key enzymes degrading polyethylene. *Polymers*, 14(23), 5127.