FERMENTATION SYSTEMS FOR THE PRODUCTION OF MYCOPHENOLIC ACID BY *PENICILLIUM PINOPHILUM* EH3

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Mycophenolic acid (MPA) is a secondary metabolite that presents diverse biological properties and clinical applications, mainly as an immunosuppressive agent. In this study, different fermentation systems were evaluated for the production of MPA by *Penicillium pinophilum* EH3. Assays were performed under solid state and submerged fermentation conditions with (SmFi) and without immobilized mycelium (SmFni). Three different materials were evaluated as supports for solid state fermentation (SSF) and SmFi, including polyurethane foam, stainless steel sponge, and a synthetic fiber (all of them from Scotch Brite, 3M Spain, SA). Defined medium and enzymatically hydrolyzed casein (in three different concentration levels: low, medium and high (7.5, 15 and 30 g/L) were used as fermentation media. MPA production was superior in SmFni using the highest level of enzymatically hydrolyzed casein than in SSF (973 mg/L vs. 784 and 547 mg/L using stainless steel sponge and polyurethane foam, respectively), achieving a specific productivity of 0.89 mg MPA/g biomass.h. MPA production started after 60 h of fermentation and reached the maximum value at 180 h. The results were still higher when the fermentation assays were performed with immobilized mycelium. In this case, SmFi with mycelium immobilized on stainless steel sponge gave the best results (1.13 g/L, 1.06 mg MPA/g biomass.h), followed by the synthetic fiber (814 mg/L, 0.94 mg MPA/g biomass.h) and finally by the polyurethane foam (730 mg/L, 0.39 mg MPA/g biomass.h). In conclusion, MPA production was maximized when using a batch submerged fermentation system with mycelium immobilized on stainless steel sponge and using enzymatically hydrolyzed casein as culture medium.

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