ABSTRACT

Biotechnological processes are achieving increased relevance in today's technological development, being enzymes such as celullases, of great economical importance in different industrial applications. The use of waste sugarcane bagasse in bioprocess is a rational alternative for the production of substrates, and a way to solve the problem of environmental pollution. The objective of this work was the isolation and selection of fungi from agroindustrial environment, with capacity of hydrolysing the cellulosic fraction of sugar cane bagasse. Forty six isolates were evatuated for their cellulolytic activity using CMC as carbon source and Cong Red as staining indicator. Fifteen isolates showed halo formation by red Congo staining, and they were evaluated for cellulolytic activity (F1 to F15), using Trichoderma ressei 9414 as a reference. The isolates were cultivated in 1% sugar cane bagasse and the cellulolytic activities were assessed by the determination of endoglucanase activity (CMCase) using carboximetilcelulose (CMC) as substrate, and the total celullase activity (FPase) applying filter paper as substrate. After 21 days of cultivation in sugar cane bagasse neither of the isolates showed total cellulase activity higher than T. ressei QM9414. From these isolates, F9 showed higher total cellulase activity after 7 cultivation days. For endoglucanase activity, the isolate F27 showed better result than T. ressei QM 9414 in the seventh cultivation day. For the endoglucanase activity kinetics, the isolates 9, 23 and 27 showed enzymatic activities very close to the reference fungus (QM9414). These results allow to suggest a great biotechnological potential for the biodiversity found in industrial niches, regarding the enzymatic hydrolysis of lignocellulosics substrates, namely the sugar cane bagasse.