ENCAPSULATION OF 6-PENTYL-α-PYRONE PRODUCED BY SOLID STATE FERMENTATION USING SUGARCANE BAGASSE (SACCHARUM OFFICINARUM) AS SUPPORT


Brazil is one of the major producers of sugarcane in the world and consequently produces large quantities of waste such as sugarcane bagasse, which can be used as inert support for the production of aroma compounds by solid state fermentation (SSF). Encapsulation can be an alternative technique to the extraction of aroma compounds produced by SSF. The purpose of this study was to encapsulate 6-pentyl-α-pyrole (6-PP), a lactone with coconut-like aroma, produced by Trichoderma harzianum IOC 4042 by SSF, using the entrapment technique in alginate-capsul gel. The solid state fermentation process using Trichoderma harzianum IOC 4042 for the production of 6-PP was conducted for 9 days and analyzed on the 3rd, 5th, 7th and 9th days for the production of aroma compound. Headspace solid-phase microextraction (HS-SPME) was used to determine 6-pentyl-α-pyrole by gas chromatography (GC). Sodium alginate-capsul capsules were formed by the entrapment technique, encapsulating the lactone extracted from SSF. The capsules were evaluated for percentage retention of the aroma compound by HS-SPME and GC. By the kinetic production of aroma it is concluded that the seventh day of fermentation yielded the largest production of the aroma compound (93ppm) as published for other studies. The entrapment technique in alginate-capsul gel formed capsules with 5.8% of the aroma compound retained. The lactone with coconut-like aroma produced by SSF can be encapsulated by the entrapment technique in the alginate-capsul gel. However, more studies should be conducted to improve the retention of 6-PP in the capsules formed by this innovative process.