



ABSTRACT

Rhizopus oligosporus is used to prepare *tempeh* and is formed by hyphae which grow as a complex branched structure with irregular borders. The objective of this research was to characterize the macro and micro structural development of *R. oligosporus* colonies growing on solid media in Petri dishes through image processing and fractal dimension. Stereomicroscope images of the colony were used to detecting the zone in which the fractal dimension (FDE) of the edge (growing front) of the colony represented 97% of the maximum FDE for the 80% of the image of the border. Evaluated characteristics were: radial growth, number of tips in the growing front and the average length of hypha. Two simultaneous events of different and oscillating magnitude were detected in the growing front: branching and increase of the average hypha length. Biomass had a good correlation with radius of the colony, fractal dimension of texture (FDT) and number of tips in the border.

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