



PROTEASE AND PEPTIDE PRODUCTION BY FUNGI IN SOLID STATE FERMENTATION

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Introduction. Solid State Fermentation (SSF) has been used for the protease production, however has not been used for bioactive peptides production³. Amaranth contains proteins that have been used for bioactive peptides production in enzymatic systems⁵. The aim of this work was the selection of fungal strain for production of proteases and bioactive peptides using amaranth as a substrate/support.

Methods. The fungal strains *R. oligosporus*, *R. microsporus*, *A. niger* 2088, *A. sp.*, *A. niger* NH15 and *A. niger*. were used. SSF was carried out over amaranth as substrate/support at pH 7, 50% humidity, 2×10^7 spores/g dry substrate and 30°C. Proteolytic activity was determined by the method of Kembhavi². Enzymatic unit (U) was defined as enzyme required for liberate the peptides equivalent to 1 µg of tyrosine per minute under assay conditions. The peptides produced in SSF were analyzed by SDS-PAGE according to Laemmli method.

Results. Higher activity was reached after 24 hours of culture for strains *R. oligosporus* (150 U/ml), *A. niger* NH15 (142 U/ml), *A. sp.* (26 U/ml) and *A. niger* 2088 (28 U/ml). On the other hand *R. microsporus* shown higher activity before 48 hours of culture (37 U/ml). And protease production obtained by all strains were comparable by similar studies Also the protease activities of all strains are lower than activity obtained from *Pseudomonas auroginosa* and *Bacillus subtilis* (720 U/ml) and (412 U / mL), in the work before mentioned production conditions were previously optimized in submerged fermentation^{1,2}.

The time to reach maximal protease production by the strains used in this work

was three times shorter than reports by other authors⁴.

Studies whit amaranth showed bioactive peptides with hypertensive capacity⁵. In the Fig.1 *R. microspores* produced the greatest number of bands corresponding to the formation of peptides that could be biological activity.

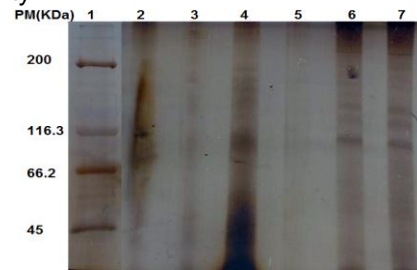


Fig.1 SDS-PAGE of proteolytic extracts obtained in SSF 1)MWM, 2) unfermented amaranth, 3) *R. oligosporus*, 4) *R. microsporus*, 5) *A. niger* NH15, 6) *A. niger* 2088 7) *A. sp.*

Conclusions. Strains studied showed protease production capability and peptide production whit possible biological activity.

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