

THE USE OF CELL IMMOBILIZATION TECHNIQUE IN SODIUM ALGinate FOR THE STORAGE OF ZYGOMYCETES

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Abstract:

The aim of this work was to evaluate the viability of Zygomycetes after storage at -20 oC and -80 oC, through cell immobilization in sodium alginate, by using glucose as cryoprotector at the concentrations of 9% and 23%. Twelve strains of Zygomycetes (07 *Mucor* sp. and 05 *Rhizopus* sp.) were maintained at 28 oC in slants containing potato dextrose agar at the fungal collection of Specialized Medical Mycology Center of the Federal University of Ceará, during seven days. Then, the colonies were removed by scraping and the fungal structures were added to two different storage solutions composed by 3% Sabouraud broth, 1.5% sodium alginate and 9 or 23% glucose. After promoting ionic gelification with calcium chloride, each sample was stored at -20 oC and -80 oC within 1.5 mL cryogenic tubes, each containing five 0.7 cm diameter beads, with a central orifice of 0.5 cm diameter. It was observed that out of 12 strains stored in 9% glucose medium at -20 oC, three were viable, after 45 days of storage, while five out of those kept at -80 oC presented post-storage viability. On the other hand, out of those strains stored in 23% glucose medium, five and nine were viable, after 45 days of storage at -20 oC and -80 oC, respectively. Literature reports the employment of carbohydrates as cryoprotectants because of their vitrification capacity which inhibits ice crystal formation that may harm cells of microorganisms that are stored at -20 oC and -80 oC. Besides, the use of the cell immobilization technique in sodium alginate allows culture fractioning and favors the conservation of Zygomycetes, which do not possess Woronin corpuscles that are responsible for isolating fungal structures that suffer lesions to avoid loss of intracellular material. This characteristic makes them very sensitive to storage, thus very hard to maintain in fungal culture collections.

Key words: Cell immobilization technique, Sodium alginate, Storage, Zygomycetes