

Journal of Chemical, Biological and Physical Sciences



An International Peer Review E-3 Journal of Sciences

Available online at www.jcbpsc.org

Section D: Development of Biotechnological Process

CODEN (USA): JCBPAT

Research Abstracts

Development of Molecular Tools for Genetic Manipulation of *Aspergillus* sp

Laura J. García-Barrera, Sara M. Uribe-Ochoa, Ángel E. Absalón and Diana Cortés-Espinosa

Instituto Politécnico Nacional. Centro de Investigación en Biotecnología Aplicada Unidad Tlaxcala. Carretera Estatal Santa Inés Tecuexcomac-Tepetitla km1.5 C.P. 90700. Tepetitla, Tlaxcala, México.

Abstract: *Aspergillus* is an important genus among the filamentous fungi. Is widely used for basic genetic research and for the production of a range of valuable products. The second is due its potential as expression host for production of heterologous proteins. Among the molecular tools needed for this aim are the selectable transformation markers and the transformation techniques.

For the development of antibiotic selection markers genes, the most widely used inhibitors are hygromycin and bleomycin. Less commonly used selective agents are phosphinothricin (which inhibits glutamine synthase causing a rapid accumulation of ammonia) and carboxin (which prevents mitochondrial respiration by inhibiting the activity of mitochondrial ubiquinone reductase or succinate dehydrogenase). Transformation techniques for *Aspergillus* are complicated because their multicellular morphology and thick chitinous cell walls. Besides the nucleated protoplast method, electroporation and biolistic technique has been studied. Here we constructed and proved two vectors with a strong constitutive promoter, one with the *bar* gene (phosphinothricin) and the other with the *cbx* gene (carboxin resistance). We also used two transformation methods (electroporation and biolistic) with two different *Aspergillus* species for later research in biopharmaceutical drugs, vaccine development or environmental remediation.

Keywords: *Aspergillus*, transformation markers, transformation technique

Laura J. García-Barrera

* laurajeannette@gmail.com