**Identification of lipase encoding genes with potential use in the biodiesel production industry**

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New opportunities for agribusiness are arising in the production of biodiesel as a substitute for fossil fuels. Chemically, biodiesel is a mixture of long chain mono-alkyl esters made from vegetable oil and methanol by transesterification. The production of biodiesel by transesterification using alkali catalyst has been the choice of industry. However, there are problems in this method such as the difficult separation of the catalyst and unreacted methanol from biodiesel. Enzymes are biocatalysts that can work in mild conditions to produce high purity product. Lipases are produced by microorganisms and have biotechnological applications that include their use in the food, pharmaceutical and cleaning products industries. Lipases can catalyze transesterification reactions in non-aqueous conditions for biodiesel production. The use of a biocatalyst avoids post- production washing steps to attain a high purity product. The search for cost effective enzymes is crucial for industry. To identify new lipases that could be used for biodiesel production we have taken a metagenomic approach. Screening of over 3,500 clones of a metagenome expression library for lipase activity, corresponding to approximately 17 Mbp, yielded twenty positive clones. Upon digestion with a restriction enzyme, five band profiles were identified on agarose gel. The plasmids of three clones were extracted and each was able to confer the lipase-positive phenotype to newly transformed *E. coli* cells, while the empty vector did not. The genes responsible for the identified lipase-activities are being cloned and molecularly characterized.

Keywords: biodiesel, lipase, library screen and metagenome.
Financial support: CNPq, FAP-DF and UCB.