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GENETIC ELIMINATION OF LIPOXYGENASES 1, 2, AND 3 FROM BRAZILIAN SOYBEAN COMMERCIAL CULTIVARS.

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Financial Support: PADCT/FINEP and NESTLÉ.

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GENOTYPIC FREQUENCIES ON LOX2, LOX3 AND $A_3A_4B_3$ LOCI IN A F_3 SOYBEAN POPULATION SELECTED FOR LONG JUVENILE TRAIT.

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Financial Support: PADCT/FINEP, CNPq (RHAE), NESTLÉ and FAPEMIG.

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LOCALIZATION OF GENES OF AGRONOMICAL INTEREST IN THE RFLP MAP OF COMMON BEANS (*Phaseolus vulgaris*, L.)

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** Department of Horticultural Sciences, 1255 Fifield Hall, U. of Florida, Gainesville, Fl. U.S.A.

A linkage map of a cross between a black seeded, Mesoamerican common bean line (Jamapa) and a purple mottle seeded, Andean bean line (Calima) was constructed based on 4 isozymes, 3 traits of agronomical interest and 41 restriction fragment lenght polymorphism loci. An F2 population of 76 plants, represented by the corresponding 76 F3 lines was analysed for all these traits.

Linkage groups are corresponding to the linkage groups that had been previously determined in a previous linkage map of common beans constructed from a different cross and using nine seed proteins, nine isozymes 224 RFLPs and a seed and color marker gene P (Vallejos et al., 1992).

Flower color genes that were studied (purple * white flowers) were located in a different linkage group from that of the P gene. The I gene which conditions hypersensitive response to the necrotic strains of Bean Common Mosaic Virus was located distally in the linkage group D. For that localization, detached leaves of F2 plants and later the corresponding F3 lines (16 plants/line) were inoculated with fresh inoculum preparations of strain type NL3.

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BIODEGRADATION OF NATURAL LIGNOCELLULOSICS SUBSTRATES BY *Phanerochaete chrysosporium* AND FBM FUNGI.

Ávila M.H; Vainstein M.H.; Quirino B.F.; Azevedo M.O.; Felipe M.S.S.

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In our country, there are abundant agricultural and industrial residues such as ball milled straw (BMS) sugar cane bagasse (SCB) and eucalyptus Sawdust (ES), which are very important renevable energy sources. We decided to look at the potential use of those residues as substrates for hydrolitic enzymes produced by *Phanerochaete chrysosporium* and a wild-type strain of a fungi, isolated from Amazon, called FBM. Although these two fungi present a similar morphological aspect, they showed variable patterns of amplified bands when submitted to RAPD analysis using 25 different random primers. We have followed, through dot blot RNA hybridization, the expression levels of genes encoding for lignin peroxidases, cellobiohyrolases, xylanases and amylases. The cellulase genes were strongly expressed when the fungi were grown in SCB and BMS and no expression was detected in ES (minimal medium, low nitrogen content). Enzymes profiles showed a high content of exported cellulases, B-glucosidase and xylanases activities only in SCB and BMS. The above results suggest a potential application of both fungi for biotechnological purpose in lignocellulosics bioconversion.

Supported by PADCT/CNPq, FUB, CAPES.

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THE USE OF XYLANASES FROM *Penicillium janthinellum* IN THE BLEACHING OF EUCALYPTUS KRAFT PULP.

A.M.F.Milagres[1]; M.R.Silva[1]; N. Duran[2]; M.Haun[3].

1-Centro de Biotecnologia - FAENQUIL - Lorena -SP 12600000; 2-Instituto de Química - UNICAMP - Campinas -SP; 3- Instituto de Biologia - UNICAMP - Campinas- SP.

Residual lignin is responsible for the brown color of kraft pulp. Different treatments are applied to those cellulosic fibers to remove this undesirable characteristic. The fibers are treated with chlorine (C), hydrogen peroxide (P), Oxygen (O) and other agents to solubilize or modify the lignin. These process generate wastes that are an environmental harzard due to the formation of chlorinated compounds. Therefore, it is of great relevance the development of an alternative process. One biotechnological answer to this problem is the use of xylanases. Since the hemicellulose seems to be covalently linked to lignin its hydrolyses would facilitate the solubilization/modification of lignin. Therefore, less chemicals would be need to bleach the cellulose. In our laboratory, we have been studying the removal of residual lignin by xylanase from *P. janthinellum*. The enzymatic step were carried out under two combinations of temperature, pH, xylanase concentration and reaction time. Kappa number and viscosity were chosen as the responses to be improved. The optima conditions to maximize the enzymatic treatment was estimated for the the following conditions: temperature 50 °C, initial pH of 5.5, xylanase concentration of 1 U/g of pulp and time of 60 min. Different process for cellulose bleaching have been evaluated combining chemical and enzymatic steps. The enzymatic step has been optmized. In the sequence CED, the pulp pre-treatment with xylanase resulted in 25% reduction of the chlorine needed to achieve the same brigtheness of a control pulp. Reduction in the requirement for sodium hypochlorite (H) and chlorine dioxide (D) in the delignification of CEHD pulp were 38,6% and 3.6 %, respectively. Short sequences with oxygen and xylanase reduced the kappa number up to 8% with no change in the pulp viscosity.

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PARTIAL PURIFICATION OF LIPASE FROM Penicillium citrinum

N.Krieger[3,4], M.M.Morais[1,2], M.P.C.Silva[1,2], J.L.Lima Filho[1,2], E.H.M.Melo[1,2], L.C.B.B.Coelho[1] and G.M.O. Souza[1].

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The industrial application of lipases depends upon the nature and source, conditions of reactions and cost of enzyme production.

Lipase from Penicillium citrinum was partially purified using a DEAE-cellulose column (30cm length x 1.5cm width). Lipase solution (2.2ml) was eluted with 50mM citrate-phosphate buffer pH = 5.0, using a flow rate of 15 ml/h. Two protein bands were obtained by SDS-PAGE, electrophoresis of the eluted fractions which contained lipase activity.

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