|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Enzima | Gen | | Función | Hongo |
| Lignin peroxidase | LiP | | Degradación de lignina | *Mucor recemosus, Phanerochaete chrysosporium (*3).  Basidiomicetos (4). |
| Glyoxal oxidase | GLOX | | Basidiomicetos (4). |
| Manganese peroxidase | Mnp1 | | (6) (11) *Peniophora cinerea, Psilocybe castanella*, tres cepas de *Trametes villosa, T. versicolor, Melanoporia nigra* y *Trichaptum byssogenum.* (12) |
| 1,4-B-glucan-4-glucanohydrolase | SHJG\_1896 | | Disminuyen el grado de polimerización de celulosa | (4). |
| B-glucosidase | bgl1D, bgl1E | | Hidrolizan celobiosa para formar glucosa. | (7) |
| Cellobiohydrolase | cdh | | Exoglucanasa: produce rupturas en la molécula de celulosa | (5) |
| Protein kinase A | pkaA, pkaB | | Crecimiento y CRC(represión por catabolito de carbono) | *Aspergillus nidulans* (1). |
| AMP-activated protein kinase | snf1p protein kinase | | Asimilación del Carbono | Saccharomyces cerevisiae (1). |
| Laccase | lacG7 (*Peniophora* sp)  lacA5  (*Marasmiellus sp.*) | |  | *Cerrena unicolor, Mucor racemosus, Peniophora sp. Marasmiellus sp* (2). |
| endo-1,4-beta-D-xylanase | AN1818.2 | | Degradación de xilano | *Aspergillus sp.* (2). |
| Cellobiose quinone Oxidoreductase | Cbq | |  | (5) |
| B-1,3 glucanase | gluc78 | | Hidrolisis de beta 13 glucanos | *Trichoderma*  (8) |
| Invertase | Incw3, Incw4 | | Hidroliza los fructofuranosidos dando lugar a fructosa | (9) |
| B- xilosidase | | bxl1 | Hidrolisis de la cadena principal de Xilano | (10) |
| Filter Paper Activity | | FPase | Actividad hemicelulasa. | Pycnoporus *sanguineus*, *Acremonium sp.* (13) |
| Mannanase | | manA,man 1 |
| a-arabinofuranosidase | | arb |
| polygalacturonase | | pga1, pgaB |
| a-galactosidasa | | agl1 | *Acremonium*, *Trichoderma reesei* (13). |
| glucose-2-oxidase | | p2ox | Actividad Ligninasa | (14). |
| B-xylosidase  Hemicellulase | | bxl1 | Actividad Hemicelulasa | *Talaromyces emersonii* (10) |
| a-glucoronidase | | aguA |  |  |
| Ferulolyl esterase | | faeA |
| acetylxylan esterase | | axeA |
| arabinofuranosidases | | afbA y afbB | 1. *niger* (14). |
| arabinofuranohydrolase | | axhA |
| Xylanase | | xynB |  |  |
| 1,4-β-d-glucan cellobiohydrolase A | | cbhA | Hidrolizar compuestos O-glicosilo participa en el catabolismo de celulosa | 1. *niger* (15) |
| 1,4-β-d-glucan cellobiohydrolase B | | cbhB | Hidrolizar compuestos O-glicosilo, participa en el catabolismo de celulosa | 1. *niger* (15) |
| Endo-1,4-β-glucanase A | | eglA | Endo hidrólisis de enlaces 1,4 beta-D-glucosídicos en celulosa y cereales beta-D-glucanos. participa en el catabolismo de celulosa | 1. *niger* (15) |
| Endo-1,4-β-glucanase B | | eglB | endoglucanasa en sustratos que contienen enlaces beta-1,4 glucosídicos, como carboximetilcelulosa (CMC), hidroxietilcelulosa (HEC) y beta-glucano. Implicada en la degradación de sustratos celulósicos naturales complejos | 1. *niger* (15) |
| Endo-1,4-β-glucanase C (xyloglucanase) | | eglC | actividad hidrolasa, hidrolizar compuestos O-glicosilo .  Relacionada con el Metabolismo de D-xilano | 1. *niger* (15) 2. *nidulans* |
| D-Xylose reductase | | xyrA | Transformación de D-xilano | 1. *niger* (15)   *Candida tropicalis* |
| TalB trans-aldolase-like | | talB | Actividad catalítica Relacionada con el Metabolismo de D-xilano | 1. *niger* (15) |
| D-Xylose reductase 1 | | XYL1 | Transformación de D-xilano | *Hypocrea jecorina* (16) |
| xylanase regulator 1 | | Xyr1 | actividad hidrolasa, que actúan sobre enlaces glicosilo . Participa en catabolismo de D-xilano | *Hypocrea jecorina*(16)  *Trichoderma koningii* |
| Endo-1,4-beta-xylanase | | xyn1 | Endo hidrolisis de enlaces 1,4 beta-D-xylosidicos en xilanos. | *Hypocrea jecorina* (16)  Cryptococcus flavus |

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