

Soybean glutathiones transferase enzymes

Description of Technology: This invention relates to isolated nucleic acid fragments encoding all or a substantial portion of soybean (*Glycine max*) glutathione-S-transferase (GST) enzymes involved in the detoxification of xenobiotic compounds in plants and seeds; this invention further relates to isolated GST enzymes. The invention also relates to the construction of chimeric genes encoding all or a substantial portion of soybean GST enzymes, host cells transformed with those genes and methods for the recombinant production of soybean GST enzymes. Methods of constructing transgenic plants having altered levels of GST enzymes and screens for identifying soybean GST enzyme substrates and soybean GST enzyme inhibitors are also provided.

Patent Listing:

1. **US Patent No. 6063570**, Issued May 16, 2000, "Soybean Glutathione-S-transferase enzymes"
<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HTTOFF&p=1&u=%2Fnetahtml%2FPPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=6,063,570.PN.&OS=PN/6,063,570&RS=PN/6,063,570>
2. **US Patent No. 6168954**, Issued January 2, 2001, "Soybean glutathione-S-transferase enzymes"
<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HTTOFF&p=1&u=%2Fnetahtml%2FPPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=6,168,954.PN.&OS=PN/6,168,954&RS=PN/6,168,954>
3. **US Patent No. 6171839**, Issued January 9, 2001, "Soybean glutathione-S-transferase enzymes"
<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HTTOFF&p=1&u=%2Fnetahtml%2FPPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=6,171,839.PN.&OS=PN/6,171,839&RS=PN/6,171,839>
4. **US Patent No. 6,096,504**, Issued August 1, 2000, "Maize glutathione-S-transferase enzymes"

Market Potential: The present invention provides novel GST nucleotide sequences and encoded proteins isolated from soybean and maize. GST enzymes are known to function in the process of detoxification of a variety of xenobiotic compounds in plants, most notably, herbicides. Nucleic acid fragments encoding at least a portion of several soybean GST enzymes have been isolated and identified by comparison of random plant cDNA sequences to public databases containing nucleotide and protein sequences using the BLAST algorithms well known to those skilled in the art. The sequences of the present invention are useful in the construction of herbicide-tolerant transgenic plants, in the recombinant production of GST enzymes, in the development of screening assays to identify compounds inhibitory to the GST enzymes, and in screening assays to identify chemical substrates of the GSTs.

Benefits:

- Detoxification of xenobiotic compounds in plants and seeds
- Catalyze the conjugation of glutathione, homogluthathione (hGSH) and other glutathione-like analogs via a sulfhydryl group, to a large range of hydrophobic, electrophilic compounds

Applications:

- Plant Molecular Biology

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