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Sequence of the *psbA* gene from wild type and triazin-resistant *Nicotiana plumbaginifolia*Anikó Páy*, Marvin A. Smith[†], Ferenc Nagy and László Márton[‡]

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The sequence of the chloroplast-encoded *psbA* gene from the wild type *Nicotiana plumbaginifolia* was compared to that of the TBR2 terbutrin-resistant mutant isolated from photomixotrophic cell cultures (1). Two nucleotides were found to have been changed in the mutant *psbA* gene. The change at position 791 results in a Ser-Asn amino acid substitution. The change at position 933 does not alter the amino acid sequence. The amino acid substitution described here is at the same position as in all *psbA* genes from triazin resistant mutants so far sequenced in higher plants (2, 3); however this is the first case when Serine is replaced by Asparagine.

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-277                                     -161
CCCCCCCACCCCAATGCAATATCGAAATCTATCTCTGTAGAGAGTCCGTATTTTTCGAAATCAA

CTTCATTAAATTTGATAGATCTACATACAGCTTGGTTCACAGGATATATAGTCACTTATATCTTGAATACAAAGCTTCATTTTCTATTTATTTTGTAGAAACTAGTGTCTTGGAGTCCGTATGATTAATAAGAGATTTTACC

-1
120
ATG ACT GCA ATT TTA GAG AGA GGC GAA AGC CTA TGG GGT GGC TTC TGT AAC TGG ATA ACT AGC ACT GAA AAC GGT GTT TAC ATT GCA TGG TTT GGT GTT TTG ATG ATC GCT ACC
M T A I L E R N E S E S L W G R F L G M N I I S T E H R L Y I G W F G V L M I P I

240
TTA TTT AGC GCA ACT TCT GTA TTT ATT ATT GTC TTC ATT GGT GGT GCA GAC ATT GAT GGT ATT GGT GCA GGT GTT TGA GGG TGT CTA GTT TAC GCA AAC AAT ATT ATT TCC GGT
L T T A T S V F I I A F I A A P P V O I O G I C R E P V S G S L L Y G N H I I S S G

360
GGC ATT ATT GCT ACT TCT GCA GGT ATG TTA CAT TTT TAC GCA ATC TGG GAA GGC GCA TCC GTT GAT GAA TGG TTA TAC AAC GGT GGT GGT TAT GAA CTA GTT GTT CTA CAC TTT TTA
A I I P T S A A I G L H F Y P I W E A A S V D E M L Y N G G P Y E L I V L H F L

480
CTT GGC GCA GGT TGT TAT ATG GGT GGT GAG TTT GGT TTT GTC GGT GTG GGT ATG GCA GGT TGG ATT GCT GTT GCA TAT TGA GGT GGT GGT ACC GCA GTT TTC TTT ATG TTA
L G V A C Y M G R E W E L S F R L G M R F W I A V A Y S A P V A A A T A V V F L !

600
TAC GCA ATC GGT GAA GGA ACT TTT TCT GAT GGT ATG GGT CTA GCA ATC TCT GGT ACT TTC AAT TTT ATG ATT GTA TTT CAG GGT GAG CAC AAC ATC GGT ATG CAC GCA TTT CAC ATG TTA
Y P I G C G B S D G M P L G I S G T F N F M I V F Q A E H N I L M H P F H M L

720
GGC GTA GGT GGT TTT GTC GGC GGC CTA TTT ACT GGT ATG CAT GGT TTT TGC GTA ACT TGT ACT TTT ATC AGC GAA AGC AAT GAA TAT GGT ACT AAT GAA GGT TAC AGA TTT GGT
G G A C Y A G V F G S L F S A M H D S L V T S B L T R E T T E H E S A N E G V R F G

840
CAA GAG GAA GAA ACT TAT AAC ATC GTA GGC GGT CAT GGT TAT TTT GGC GGA TTT GAT TTC CAA TAT GGT ACT TTT CAC AAC AAC TGT TGG TTA CAC TTC TTC CTA GGT GGT TGG GGT GTA
G E E E T Y M I V A A H G Y F G B L I F Q Y A S F N N S R S L H F F L A A M P Y

960
GTA GGT ATC TGG TTT GAT TTA GGT ATC AGC ACT ATG GGT TTC AAC CTA AAT GGT TTC AAT TAC GCA GGT GGT GGT GGT GGT GGT GGT GGT GGT GGT GGT GGT GGT GGT GGT GGT
V G I M F T A L C I S T M A F M L N G F W M Q S V V D S O C R Y I N T W A D I

1086
ATT AAC GGT GGT ACT GTT GGT ATG GAA GTT ATG CAT GAA GGT AAT GGT GGC AAC TTC GGT CTA GCA CTA GGT GGT ATC GCA GGT GCA TGT ACA AAT GGA TAAATGCCAGCTAGTGTATAGAGG
I N R A N L G H E V M H E R N A N H F P L O L A A I E A P S T H D

1141
TTTTCACACACACACACATATATTTTGTGTGTATATGACAGGTGTATTT

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Legend: The nucleotide and the deduced amino acid sequence of the *psbA* gene of *N. plumbaginifolia* is shown. The Ser-Asn substitution in the mutant *psbA* gene at codon 264 is boxed. The "silent" nucleotide-change at 933 position is also indicated. The *N. plumbaginifolia psbA* gene spans an *EcoRI*-*PstI* restriction endonuclease fragment of 0.9kb and a *PstI* fragment of 2.3kb.

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