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<110> Philip Morris Products S.A.

<120> REDUCTION OF ASPARAGINE CONTENT IN PLANTS

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<141> 2015-09-09

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eolf-seql

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eolf-seql

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eolf-seql

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eolf-seql

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eolf-seql

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410

415

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eolf-seql

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eolf-seql

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eolf-seql

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eolf-seql

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eolf-seq1

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eolf-seq1

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eolf-seq1

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eolf-seql

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			20					25					30		

eolf-seql

Pro Asp Trp Ser Gly Leu His Ser His Asp Asp Cys Tyr Leu Ala His
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Gln Arg Leu Ala Ile Val Asp Pro Thr Ser Gly Asp Gln Pro Leu Tyr
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Asn Glu Asp Lys Thr Ile Val Val Ala Val Asn Gly Glu Ile Tyr Asn
65 70 75 80

His Arg Asp Leu Arg Glu Lys Leu Lys Ser His Gln Phe Arg Thr Gly
85 90 95

Ser Asp Cys Glu Val Ile Ala His Leu Tyr Glu Asp Tyr Gly Glu Asp
100 105 110

Phe Val His Met Leu Asp Gly Met Phe Ser Phe Val Leu Leu Asp Thr
115 120 125

Arg Asp Lys Ser Phe Ile Ala Ala Arg Asp Ala Ile Gly Ile Thr Pro
130 135 140

Leu Tyr Met Gly Trp Gly Leu Asp Gly Ser Val Trp Phe Ser Ser Glu
145 150 155 160

Met Lys Ala Leu Ser Asp Asp Cys Glu Arg Phe Val Ser Phe Leu Pro
165 170 175

Gly His Ile Tyr Ser Ser Lys Asn Gly Gly Leu Arg Arg Trp Tyr Asn
180 185 190

Pro Pro Trp Tyr Ser Glu Thr Ile Pro Ser Thr Pro Tyr Asp His Leu
195 200 205

Val Leu Arg Lys Ala Phe Glu Lys Ala Val Val Lys Arg Leu Met Thr
210 215 220

eolf-seql

Asp Val Pro Phe Gly Val Leu Leu Ser Gly Gly Leu Asp Ser Ser Leu
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Val Ala Ala Val Ala Asn Arg Tyr Leu Ala Asp Thr Glu Ala Ala Arg
245 250 255

Gln Trp Gly Ser Gln Leu His Thr Phe Cys Val Gly Leu Lys Gly Ser
260 265 270

Pro Asp Leu Lys Ala Ala Arg Glu Val Ala Asp Tyr Leu Gly Thr Arg
275 280 285

His His Glu Phe His Phe Thr Val Gln Glu Gly Ile Asp Ala Leu Asp
290 295 300

Glu Val Ile Tyr His Val Glu Thr Tyr Asp Val Thr Thr Ile Arg Ala
305 310 315 320

Ser Thr Pro Met Phe Leu Met Ser Arg Lys Ile Lys Ser Leu Gly Val
325 330 335

Lys Met Val Leu Ser Gly Glu Gly Ser Asp Glu Ile Phe Gly Gly Tyr
340 345 350

Leu Tyr Phe His Lys Ala Pro Asn Lys Glu Glu Phe His Gln Glu Thr
355 360 365

Cys Arg Lys Ile Lys Ala Leu His Leu Tyr Asp Cys Leu Arg Ala Asn
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Lys Ser Thr Ser Ala Trp Gly Val Glu Ala Arg Val Pro Phe Leu Asp
385 390 395 400

Lys Glu Phe Val Asn Val Ala Met Asn Met Asp Pro Glu Ser Lys Met
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eolf-seql

Ile Arg Pro Asp Leu Gly Arg Ile Glu Lys Trp Val Leu Arg Asn Ala
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Phe Asp Asp Asp Gln Asn Pro Tyr Leu Pro Lys His Ile Leu Tyr Arg
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Gln Lys Glu Gln Phe Ser Asp Gly Val Gly Tyr Ser Trp Ile Asp Gly
450 455 460

Leu Lys Asp His Ala Ser Arg Leu Val Ser Asp Ser Met Leu Ala Asn
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Ala Ser Phe Val Tyr Pro His Asn Thr Pro Thr Thr Lys Glu Gly Tyr
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Tyr Tyr Arg Thr Ile Phe Glu Arg Tyr Phe Pro Lys Asn Ala Ala Arg
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Glu Thr Val Pro Gly Gly Pro Ser Val Ala Cys Ser Thr Ala Lys Ala
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Ala Ala Val Ala Val
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24

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<213> Artificial Sequence

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<210> 16

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<223> Primer

<400> 16

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<210> 17

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<212> DNA

eolf-seql

<213> Nicotiana tabacum

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<212> DNA

<213> Nicotiana tabacum

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eolf-seq1

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eolf-seql

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<212> PRT
<213> Nicotiana tabacum

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Pro Asp Trp Ser Gly Leu Tyr Gln His Gly Asp Cys Tyr Leu Ala His
35 40 45

Gln Arg Leu Ala Ile Val Asp Pro Ala Ser Gly Asp Gln Pro Leu Phe
50 55 60

Asn Glu Asp Lys Thr Ile Val Val Thr Val Asn Gly Glu Ile Tyr Asn
65 70 75 80

His Glu Gln Leu Arg Lys Gln Met Pro Asn His Lys Phe Arg Thr Gly
85 90 95

Ser Asp Cys Asp Val Ile Ala His Leu Tyr Glu Glu His Gly Glu Asp
100 105 110

Phe Val Asp Met Leu Asp Gly Ile Phe Ala Phe Val Leu Leu Asp Thr
115 120 125

eolf-seql

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<213> Nicotiana tabacum

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eolf-seql

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 <212> PRT
 <213> Nicotiana tabacum

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		20						25					30		

Pro	Asp	Trp	Ser	Gly	Leu	Tyr	Gln	His	Gly	Asp	Cys	Tyr	Leu	Ala	His
		35					40					45			

eolf-seql

Gln Arg Leu Ala Ile Val Asp Pro Ala Ser Gly Asp Gln Pro Leu Phe
50 55 60

Asn Glu Asp Lys Thr Ile Val Val Thr Val Asn Gly Glu Ile Tyr Asn
65 70 75 80

His Glu Gln Leu Arg Lys Gln Met Pro Asp His Lys Phe Arg Thr Gly
85 90 95

Ser Asp Cys Asp Val Ile Ala His Leu Tyr Glu Glu His Gly Glu Asp
100 105 110

Phe Val Asp Met Leu Asp Gly Ile Phe Ala Phe Val Leu Leu Asp Thr
115 120 125

Arg Asp Asn Ser Phe Leu Val Ala Arg Asp Ala Ile Gly Ile Thr Ser
130 135 140

Leu Tyr Ile Gly Trp Gly Leu Asp Gly Ser Val
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<211> 1818
<212> DNA
<213> Artificial Sequence

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<221> mutation
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tcaacatggt gatttttact tagcacatca acgttttagca attatcgatc ctgcttctgg 180

eolf-seq1

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eolf-seql

```

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<213> Artificial Sequence

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<220>
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Met Cys Gly Ile Leu Ala Leu Leu Gly Cys Ser Asp Asp Ser Gln Ala
1           5           10          15

```

```

Lys Arg Val Arg Val Leu Glu Leu Ser Arg Arg Leu Lys His Arg Gly
20           25           30

```

```

Pro Asp Trp Ser Gly Ile Tyr Gln His Gly Asp Phe Tyr Leu Ala His
35           40           45

```

```

Gln Arg Leu Ala Ile Ile Asp Pro Ala Ser Gly Asp Gln Pro Leu Phe
50           55           60

```

```

Asn
65

```