Pre-plastocyanin from *Lycopersicon esculentum*

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Plastocyanin is a soluble electron transfer protein found in most photosynthetic organisms. This blue copper protein, which functions as the oxidant of cytochrome f and the reductant of the P700 reaction center, has been the subject of studies ranging from kinetics[1] to molecular biology.[2] A *Lycopersicon esculentum* (tomato) cDNA library[3] was screened using a portion of the plastocyanin gene from *Silene pratensis*.[4] The sequence of the largest cDNA clone obtained is presented in Figure 1. Based on the nucleic acid sequence, tomato pre-plastocyanin consists of a transit peptide of 71 amino acids and a mature peptide of 99 residues.

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ATCAAC                                                                  6
TCCTACTCCCCTTTTCTTGATTCCAAATTTTCAATCACAAAAGCAACAACAAGAAGCATATTAATAAACA  76
ATGGCCACTGTTACCTCTGCTGCTGTTGCTATTCCATCTTTCACTGGCCTTAAGGCTGGTGCTTCATCAT 146
M  A  T  V  T  S  A  A  V  A  I  P  S  F  T  G  L  K  A  G  A  S  S  S
CTTCCAGAGTTAGCACCGGTGCATCCGCTAAGGTGGCAGCTGCCCCAGTTGCCAGATTGACTGTGAAGGC 216
   S  R  V  S  T  G  A  S  A  K  V  A  A  A  A  P  V  A  R  L  T  V  K  A
GTCTTTGAAAGATGTCGGTGCTGTGGTTGCTGCCACCGCTGTTAGCGCGATGCTTGCTAGCAATGCCATG 286
 S  L  K  D  V  G  A  V  V  A  A  T  A  V  S  A  M  L  A  S  N  A  M
GCACTTGAAGTGTTGCTTGGTGGTGATGATGGGAGTCTAGCTTTTATTCCTGGGAACTTCAGCGTTAGTG 356
A  L  E  V  L  L  G  G  D  D  G  S  L  A  F  I  P  G  N  F  S  V  S  A
CTGGTGAGAAAATTACATTCAAGAACAATGCAGGGTTCCCACACAACGTCGTATTTGATGAAGATGAAAT 426
   G  E  K  I  T  F  K  N  N  A  G  F  P  H  N  V  V  F  D  E  D  E  I
CCCAGCTGGTGTGGATGCTAGTAAGATTTCCATGTCTGAAGAGGATCTTCTGAATGCAGCAGGAGAGACA 496
 P  A  G  V  D  A  S  K  I  S  M  S  E  E  D  L  L  N  A  A  G  E  T
TACAGTGTCACTTTGAGTGAGAAAGGAACTTACACTTTCTACTGTGCACCTCACCAGGGAGCTGGAATGG 566
Y  S  V  T  L  S  E  K  G  T  Y  T  F  Y  C  A  P  H  Q  G  A  G  M  V
TTGGCAAAGTTACTGTCAACTAATTTTTTTCACACCTCTGTTTTGTAAAAGTTGATTTGAGTTCCCATCA 636
   G  K  V  T  V  N
ATTTCAACATTTCCTTTTAGTATTGCCCTTCTCTTTTTGAGGTGTAATGAAAACTCAGGAAATTAAAGT  706
TGCACATGTATCCATGTAATGTCATTTTGTGATT(An)                                  739
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Figure 1. Pre-plastocyanin clone from *Lycopersicon esculentum* with peptide sequence below coding region. Mature tomato plastocyanin (based on processing between A 71 and L 72) shows highest similarity with plastocyanin from *Solanum tuberosum* (99%). A BESTFIT[5] alignment of other mature peptides from published DNA sequences showed 85.7% similarity with *Silene pratensis*[4], *Spinacia oleracea*[6], *Hordeum vulgare*[7] and *Arabidopsis thaliana*[8]. The transit peptides show higher levels of divergence.

References:

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