## MS-2

# Structure of N-terminal Extension in Human Aspartyl-tRNA Synthetase

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In mammalian cells, nine aminoacyl-tRNA synthetase, including aspartyl-tRNA synthetase, are associated within a multienzyme complex. Human aspartyl-tRNA synthetase contains a unique N-terminal polypeptide that is thought to be responsible for the complex formation. To deduce the function of this peptide, the 21amino acid N-terminal polypeptide(from Thr5 to Lys25) was chemically synthesized and subjected to 2D-NMR spectroscopies. 165 interproton constraints derived from NOESY experiments were used to determine the three dimensional structure of this peptide. The amphiphilic region of the peptide has been shown to play important roles in the interaction with other tRNA synthetase found in multi-synthetase complex as well as in aspartylation of cognate tRNA. Our results suggest that the hydrophobic and hydrophilic sides of the helix may be involved in protein-protein and protein-nucleic acid interactions, respectively.