The nucleotide sequence of a valine accepting tRNA from *Lupinus luteus* (lupin) seeds

M. Barciszewska and D. S. Jones

Institute of Bioorganic Chemistry of the Polish Academy of Sciences, Noskowskiego 12, 61704 Poznan, Poland and ¹Department of Biochemistry, University of Liverpool, PO Box 147, Liverpool L69 3BX, UK

Submitted December 30, 1986

Origin The isolation of crude tRNA from yellow lupin seeds, the purification of tRNA$^{Val}$ and methods for the nucleotide sequence determination have been described previously [1]. The results show the tRNA$^{Val}$ to have the cloverleaf structure shown in the figure.

Discussion Although the sequences of tRNA$^{Val}$ species from eubacteria, halobacteria, yeasts, mammals and plant chloroplasts are known [2], this is the first reported sequence of a cytoplasmic plant tRNA$^{Val}$. As might be expected the sequence of this cytoplasmic tRNA$^{Val}$ shows little resemblance to a plant chloroplast tRNA$^{Val}$ (spinach) but it has 80% homology with mammalian tRNA$^{Val}$ [2]. The homologies between other isoaccepting mamalian and plant tRNAs are of the same order (e.g. that for tRNA$^{Phe}$ is 82%).

The nucleoside modification pattern shows several interesting features. This tRNA$^{Val}$ fits into the AAC anticodon class of tRNA but, as with other eukaryotic tRNAs belonging to genetic code 'family boxes', the A in the first position of the anticodon has been replaced by I. In general the nucleoside modification pattern is similar to that of mammalian tRNA$^{Val}$, however, whereas the mammalian species have several modifications to cytidine, no C modifications are present in lupin tRNA$^{Val}$. This is not due to the lack of the modification enzymes since modified Cs are present in other lupin tRNAs. Also, in mammalian tRNA$^{Val}$, U$_{54}$ is unmodified whereas, in the plant tRNA$^{Val}$, residue 54 is occupied by the more normal T. This is quite the reverse of the situation in tRNA$^{Gly}$ where it is the plant tRNA which has the unmodified U at this position [3] whereas the mammalian tRNA$^{Gly}$ has T$_{54}$. Since T$_{54}$ has been shown to have a role in the modulation of eukaryotic protein synthesis, these differences may have significant implications.

M.B. acknowledges support from The Royal Society/Polish Academy of Sciences, exchange programme.