Inability of *Agrobacterium tumefaciens* Ribosomes to Translate *in vivo* mRNAs Containing Non-Shine-Dalgarno Translational Initiators

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Numerous data accumulated during the last decade have shown that the Shine-Dalgarno (SD) sequence is not a unique initiator of translation for *Escherichia coli*. Several other sequences, mostly of viral origin, have demonstrated their capability of either enhancing or initiating translation in vivo. A phage T7 gene *10* sequence, called "epsilon" (ε), has shown its high enhancing activity on translation in both *Escherichia coli* and *Agrobacterium tumefaciens* cells. In this study the ε, together with three other nucleotide sequences derived from the 5′ non-translated regions of tobacco mosaic virus (TMV), papaya mosaic virus (PMV) and clover yellow mosaic virus (CYMV) RNAs are tested for translation initiation activity in *A. tumefaciens* cells. The obtained results indicate that none of them was capable of initiating translation in vivo of chloramphenicol acetyltransferase (CAT) mRNA. To determine whether their inactivity was related with structural differences in the ribosomal protein S1, the *rpsA* gene (coding for S1 protein in *E. coli*) was co-expressed in *A. tumefaciens* together with the *cat* gene placed under the translational control of the above sequences. Our results showed that the *rpsA* gene product did not make any of the four viral enhancers active in *A. tumefaciens* cells. The inability of *A. tumefaciens* ribosomes to translate mRNAs devoid of SD sequences indicates for a substantial difference in the ribosome structure of the two Gram negative bacteria *E. coli* and *A. tumefaciens*.