

SECONDARY STRUCTURE OF THE PANHANDLE RNA OF INFLUENZA VIRUS A STUDIED BY NMR SPECTROSCOPY

Hae-Kap Cheong, Byong-Seok Choi and Chaejoon Cheong¹
Dept. of Chemistry, KAIST, Taejeon, 305-701, and Magnetic Resonance
Group, KBSI¹, Taejeon, 305-333

The double-stranded panhandle structure of the influenza virus RNA is important for the replication, transcription and packaging into the virion of the vRNA. The solution structure of a 34-nucleotide-long RNA which contains the conserved panhandle sequences has been investigated by one- and two-dimensional NMR spectroscopies. The partially complementary 5' and 3' ends of the RNA adopt a double helical A-form structure. A G·U base pair forms in the middle of the stem with little distortion from the canonical A-form geometry. The stem contains bulges at nucleotides A10, A12 and C26 [see Fig. 1(d)]. In between these bulges, C11 and G25 form a Watson-Crick base pair. The structural features of the panhandle provide a framework for the explanation of mutational analysis and for better understanding of RNA-polymerase interactions.