Rat and chick cDNA clones encoding HMG-like proteins

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HMG box containing proteins, such as hUBF and SRY, bind DNA and may regulate transcription (1, 2, 3); however, a consensus binding site has not been identified. The mouse HMG-like protein (T160) binds to a sequence involved in V-(D)-J recombination (4), whereas the homologous human protein (SSRP1) binds to cisplatin modified DNA (5). We have cloned a 2.1 kb rat cDNA (CIIDBP-r) by screening a chondrosarcoma cDNA expression library with a sequence (5'-TCTCCCAC-AATGCATCCCCC-3') located in the first intron enhancer of the collagen II gene that has been shown to bind chondrocyte nuclear factors (6). We then isolated a chick homolog (2.1 kb, CIIDBP-c) by Southern screening of a chick chondrocyte cDNA library. Comparison of the DNA and derived protein sequences revealed that the CIIDBP-r and CIIDBP-c are highly homologous to each other and to T160 and SSRP1 (Figure 1). A comparison of the sequence within the HMG box (the putative DNA binding domain) suggests higher conservation between mammals than between mammalian and avian species (Figure 2). Also, the identity within the HMG box between the HMG-like proteins and that of HMG-1 is less than 50%, suggesting that they may be evolutionarily linked but functionally distinct. Probing of Northern blots with both the rat and chick cDNAs revealed the expression of a 2.3 kb transcript in a wide variety of cell types (data not shown), as is the case for both the mouse and human clones as well. Therefore, it is possible that all four genes encode the same DNA-binding protein and the slight sequence differences could be attributed to species variation. The isolation of the clones described herein should prove valuable in ascertaining the function of these HMG-like proteins.

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REFERENCES