## Crystal Structure of the Catalytic Fragment of 2',3'-Cyclic nucleotide 3'-Phosphodiesterase from Human Brain

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2',3'-Cyclic-nucleotide 3'-phosphodiesterase (CNP), a member of the 2H phosphoesterase superfamily, is firmly bound to brain white matter and found mainly in the central nervous system of vertebrates, and it catalyzes the hydrolysis of 2',3'-cyclic nucleotide to produce 2'-nucleotide. Here we report crystal structure of the catalytic fragment (CF) of human CNP (hCNP-CF) at 1.8Å resolution [1]. On the basis of the present crystal structure of the hCNP-CF/phosphate complex, the available structure of the CPDase/cyclic nucleotide analogue complex, and the recent functional studies of rat CNP-CF, we propose a possible substrate-binding mode and catalytic mechanism of CNP. The proposed mechanism is basically equivalent to the second step of the well-accepted reaction mechanism of RNase A. Since the overall structure of hCNP-CF differs considerably from that of RNase A, it is likely that the similar active sites with two catalytic histidine residues in these enzymes arose through convergent evolution.

[1] Sakamoto Y., Tanaka N., Ichimiya T., Kurihara T., Nakamura, K. T., J. Mol. Biol., 2005, **346**, 789.

Keywords: CNPase, myelin, phosphodiesterase