Poster Presentation

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Species-dependent variation in the structure of the CK2α-apigenin complex

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Ser/Thr kinase CK2, consisting of two catalytic α subunits and two regulatory β subunits, represents various cell fates such as proliferation and is a crucial target for cancer and glomerulonephritis therapies. To date, several planar compounds have been identified as ATP-competitive CK2-inhibitors including apigenin, a flavonoid inhibitor. We here determined the crystal structures of human CK2α complexed with apigenin and an ATP analogue (AMPPNP) at 2.3 and 2.5 Å resolution, respectively and investigated the species specificity in the molecular recognition by the structural comparisons of these complexes with each maize equivalent. The pairs of the superimposed structures reveal that apigenin binds to human and maize CK2α in the quite distinct manners. while AMPPNP binds to the both species in a similar manner. Together with the chemical calculations, we deduce that the alternation at the Leu45/Val45 position of CK2α largely contributes to the species-dependent variation in the apigenin binding mode although the discrepancy is unrelated to the structural conservation in the ATP binding mode.

Keywords: Drug discovery, species-dependent variation