# Structure of Diol Dehydratase Reactivating Factor – A Novel Molecular Chaperone

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Diol dehydratase and glycerol dehydratase are adenosylcobalamin-dependent enzymes that catalyze the conversion of 1,2-propanediol, 1,2-ethanediol and glycerol to the corresponding aldehydes. Glycerol, a physiological substrate for the enzyme, inactivates the enzyme in an irreversible manner. Diol dehydratase reactivating factor is a molecular chaperone, reactivating the inactivated diol- and glycerol dehydratases in the presence of AdoCbl, ATP and $Mg^{2+}$. Here we report the crystal structures of ADP-bound and nucleotide-free forms of diol dehydratase reactivating factor.

Initial electron density map of the selenomethionine-substituted ADP-bound form was obtained from the MAD diffraction data collected at the BL38B1 beam line, SPring-8, Japan. Diffraction data sets for native ADP-bound and nucleotide-free crystals were collected at the BL41XU beam line, SPring-8, Japan.

Structure of nucleotide-free diol dehydratase reactivating factor is similar to that of nucleotide-free glycerol dehydratase reactivating factor reported by Liao *et al.* [1]. The ADP-bound form of diol dehydratase reactivating factor shows rearrangement of domains with respect to its nucleotide-free form.

[1] Liao, et al., *Structure*, 2003, **11**, 109.

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