

### **Probing two Heads Configuration of Heavy Meromyosin by High-pressure SAXS Technique**

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We are studying multiple conformations of myosin, by employing the high-pressure X-ray scattering (HP-SAXS). High hydrostatic pressures would shift the equilibrium between conformations. The heavy meromyosin (HMM), a chymotryptic product of myosin, is known to have two heads with one long tail, and HP-SAXS is highly sensitive to the two head orientations. We have carefully optimized the solvent condition for minimal deterioration of HMM both due to aging and radiation damage. The experiments were done at BL45XU-SAXS (SPring-8, Harima) using a compact high-pressure cell [1].

Under 0.1-200 MPa, no structural change was observed that points to that the asymmetric configuration of two heads was rather stable [2]. Above 250 MPa, HP-SAXS pattern of HMM irreversibly changed. At room temperature the change is kinetically controlled, while at -12 °C under 200 MPa HMM structure was equilibrated. The pressure treated samples were all reversible in terms of actin binding and intrinsic Trp fluorescence. We will report on the solution structure of HMM based on HP-SAXS under the low temperature and high-pressure condition.

[1] Nishikawa Y., Fujisawa T., Inoko Y., Moritoki M., *Nucl Instrum Meth A*, 2001, **467**, 1384. [2] Harris S.P., Heller W.T., Greaser M.L., Moss R.L., Trewella J., *J Biol Chem.*, 2003, **278**, 6034.

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