

Radiation protection effect of ethylene glycol and glycerol on proteins

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Previously, we investigated the radiation protection effect of ethylene glycol on bovine beta lactoglobulin [1]. To investigate the radiation protection effect on proteins more extensively, we have studied the radiation effect of three proteins (bovine beta lactoglobulin, lysozyme and bovine serum albumin) in the absence and presence of ethylene glycol and glycerol.

All experiments were done at BL-10C of Photon Factory. X-ray solution scattering studies of the three proteins were done in the absence and presence of ethylene glycol (1%, 5%, 10% and 45%) or glycerol (1% and 5%). With 1% glycerol or 10% ethylene glycol, no detectable effects appeared in three proteins as long as 1 hour. With 1% or 5% ethylene glycol, radius of gyration became bigger after 40 min in case of bovine beta lactoglobulin and lysozyme.

Thus, we can conclude that both ethylene glycol and glycerol are radiation protectants, but glycerol is much superior to ethylene glycol.

1. Kihara *et al.* (2003) Photon Factory Activity Report, 20, 255