



Experiment title: Heavy atom derivatives for a plant small heat shock protein	Experiment number: LS1672	
Beamline: ID14-1	Date of experiment: from: 19/02/2000 to: 21/02/2000	Date of report: 22/08/2000 <i>Received at ESRF:</i> 28 AOUT 2000
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Report:

Small heat shock proteins (sHSP) form a diverse family of proteins, which protect cells from stress by binding unfolded proteins. SHSP's have a size of 12-27 kDa, but generally form large oligomers of different sizes. The structure of the sHSP from archea *M. Janashii* (Kim et al.) gave a first insight in such a complex, but only revealed the structure of the C-terminal domain of the two-domain sHSP monomer. To shed more light on the various functions of this protein family, we have grown crystals of a small shock protein from plant. Molecular replacement trials using the *M. Janashii* structure failed, due to the limited sequence homology with the plant heat shock protein. Therefore, we carried out an extensive search for heavy atom derivatives and substituted the protein with selenomethionine to be able to do MAD-experiments (see also experimental reports on data collected at BM14 under proposal LS1527 and LS1672).

At the ID14-1 we have collected three data sets of crystals soaked in 3mM uranyl acetate, mercury acetate and gold chloride respectively. All data sets were of good quality, however both difference Patterson maps and difference Fouriers, using previously obtained MAD-phases, showed that none of the heavy atom compounds had bound to the protein. Recently, we have been able to solve the structure of the plant sHSP using MAD data collected on BM14 (see also experimental reports LS1527 and LS1672). The structure is currently being refined.