Supplement 1

Alignment of 11 thermostable proteins of *Nelumbo nucifera* Gaertn var. China Antique: *Nelumbo* thermal proteins (soluble at 100°C, 10-min heat) were identified by mass spectrometry. The peptide fragments (>3; ion score >32) used as BLAST queries (NCBI; Camacho et al. 2009) against predicted Nelumbo proteome (Ming et al. 2013) are aligned with the archaean *Methancaldococcus jannaschii* (Mj; 85°C growth optimum) and those of Arabidopsis, corn, grape, poplar, soybean using MUSCLE (Edgar, 2004), and visualized using ESPript (Gouet et al. 1999). Identities among the residues are shown in red, similarities in pink. Thirty thermoproteins of *Nelumbo* China Antique identified by MS, unaligned, are listed in Supplement 2.

Fig. **S-1a** **CuZn-SOD**; NNU_001676

Fig. **S-1b** **1-CysPRX**; NNU_016172

Fig. **S-1c** **CPN20**; NNU_010559

Fig. **S-1d** **Vicilin**; NNU_007171

Fig. **S-1e** **ENO-1**; NNU_002362, 020386, 021001

Fig. **S-1f** **EF-1α**; NNU_024576, 024577, 026673

Fig. **S-1g** **HSP80**; NNU_010290

Fig. **S-1h** **Met-Synthase**; NNU_013651 (Mj alignment not shown)

Fig. **S-1i** **Dehydrin**; NNU_006332, 013652, 013851

Fig. **S-1j** **PIMT**; NNU_002938, 004234

Fig. **S-1k** **CPN60**; NNU_011934, 023642

Supplement 2

Thirty thermostable proteins (soluble at 100°C, 10-min heat) of embryo axes of *Nelumbo nucifera* Gaertn var. China Antique are identified by mass spectrometry (each having at least 3+ fragments with ion scores 32-126). The 11 *Nelumbo* thermoprotein alignments with plant species and *Methancaldococcus jannaschii* (discussed in the text) are presented in Supplement 1.

1. Actin-12
2. Aldose reductase
3. Allergen Ara h1 clone
4. nep1 Aspartic proteinase nepenthesin1
5. yajl Chaperone protein yajl
6. Embryonic protein DC-8
7. Pistil-specific Extensin-like protein
8. FBA Fructose bisphosphate aldolase (cytosol isozyme)
9. 11S Globulin β
10. FA02 13S Globulin seed-storage protein1
11. GluA1 Glutelin-type A1
12. GluB1-A Glutelin-type B1
13. GAPC Glyceraldehyde-3-phosphate dehydrogenase (cytosol)
14. HSP18.2 18.2 kDa Class-1 Heat shock protein
15. HSP70
16. LEA Late embryogenesis abundant proteins Dc3, Dc8, D34

17. LEGA Legumin A
18. LEGB Legumin B
19. LT65 Low temperature induced 65 kDa protein
20. BIP5 Luminal-binding protein 5
21. CMDH Malate dehydrogenase
22. METE 5-Methyltetrahydropteroyl tri-glutamate homocysteine methyltransferase
23. Early Nodulin-like protein 1 (At2g25060)
24. Notum Protein notum homolog
25. PECS-5 2.1 Pectinesterase2
26. PCKR1 Peptidyl-prolyl cis-trans isomerase
27. PER12 Peroxidase 12
28. Phosphoglycerate kinase (cytosol)
29. TCHH Tricohyalin
30. Triose-phosphate isomerase