**Supplementary material to:**

**Maltose-mediated long-term stabilization of freeze- and spray- dried forms of bovine and porcine hemoglobin**

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Figure S1. DSC thermogram of un-aged amorphous maltose monohydrate showing the glass transition and enthalpy relaxation endotherm at the glass transition temperature.



Fig S2. Thermal unfolding and denaturation profile of freeze-dried A) bovine hemoglobin without maltose (bHb) and B) with maltose (bHbM), C) porcine hemoglobin without maltose (pHb) and D) with maltose (pHbM)



Fig S3. Thermal unfolding and denaturation profile of spray-dried A) bovine hemoglobin without maltose (bHb) and B) with maltose (bHbM), C) porcine hemoglobin without maltose (pHb) and D) with maltose (pHbM)

Table S1. Spectral characteristics of spray-dried and freeze dried pooled bovine and porcine hemoglobin without (Hb) and with maltose (HbM), rehydrated after 2 years storage at ambient temperature. Hemoglobin stored at -20°C represents a control of the measurement.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | Soret band (nm) | Δα/Δβ\* | ΔAsoret/A275nm | ΔAsoret/A577nm | A630 |
|   | Bovine hemoglobin |
| Hb -20 ºC | 410.5 | 0.94 | 3.93 | 11.41 | 0.012 |
| Hb spray-dried | 406.5 | 0.04 | 4.27 | 28.78 | 0.029 |
| HbM spray-dried | 408.5 | 0.81 | 3.43 | 12.90 | 0.019 |
| Hb lyophilized | 405.0 | 0.05 | 4.47 | 30.38 | 0.027 |
| HbM lyophilized | 411.5 | 0.99 | 3.35 | 10.12 | 0.010 |
|  | Porcine Hb |
| Hb -20 ºC | 407.5 | 0.94 | 3.67 | 11.73 | 0.016 |
| Hb spray dried | 405.5 | 0.14 | 4.20 | 9.90 | 0.028 |
| HbM spray dried | 406.0 | 0.61 | 3.48 | 10.13 | 0.024 |
| Hb lyophilized | 406.0 | 0.14 | 4.09 | 20.17 | 0.029 |
| HbM lyophilized | 409.0 | 0.90 | 3.49 | 14.11 | 0.014 |
| \* Δα/Δβ = (A577-A560) / (A541-A560) |  |  |  |

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