Supporting Information

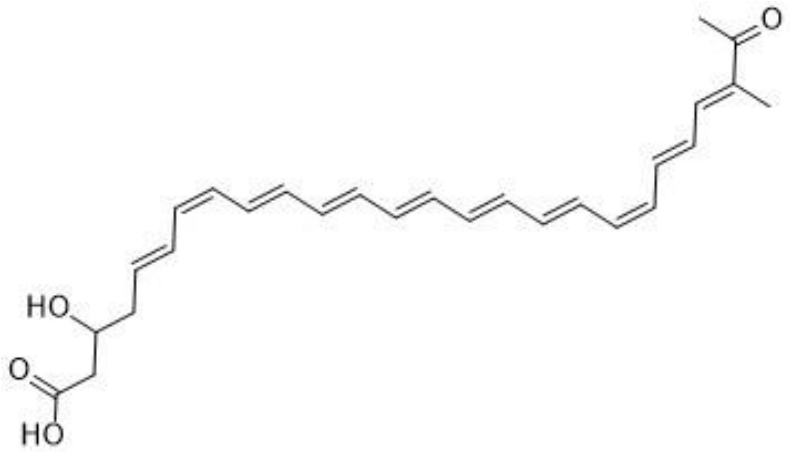
Pilot-scale Production of the Natural Colorant Laetiporic Acid, its Stability and Potential Applications

Pia Bergmann [1,*], Christina Frank [1], Olena Reinhardt [2], Meike Takenberg [1], Anett Werner [2], Ralf G. Berger [1], Franziska Ersoy [1] and Marlen Zschätzsch [2]

[1] Institute of Food Chemistry, Leibniz University Hannover, 30167 Hannover, Germany;
[2] Institute of Natural Materials Technology, Technical University of Dresden, 01062 Dresden, Germany;
* Correspondence: pia.bergmann@lci.uni-hannover.de

SNL Agar
1 L SNL contains 30 g D-glucose monohydrate, 4.5 g L-asparagine monohydrate, 3 g yeast extract, 1.5 g KH_2PO_4, 0.5 g $MgSO_4$, 5 µg $CuSO_4 \cdot 5\ H_2O$, 80 µg $FeCl_3 \cdot 6\ H_2O$, 30 µg $MnSO_4 \cdot H_2O$, 90 µg $ZnSO_4 \cdot 7\ H_2O$, 400 µg EDTA and 20 g agar-agar.
pH is adjusted to 6.0

Moser b Medium
1 L Moser b contains 30 g D-glucose monohydrate, 10 g malt extract, 2 g peptone, 0.15 g K_2HPO_4, 0.35 g KH_2PO_4, 1 g NH_4NO_3, 0.3 g $NaNO_3$, 0.5 g $MgSO \cdot 7\ H_2O$, 0.1 g $CaCl_2$, 1 mg biotin, 50 mg inositol, 18 mg $ZnSO_4 \cdot 7\ H_2O$, 10 mg $FeCl_3$, 5.6 mg $MnSO_4 \cdot H_2O$ and 50 mg thiamine hydrochloride.
pH is not adjusted



Scheme S1. Laetiporic acid A, the dominant pigment found in submerged cultures of *Laetiporus sulphureus*.

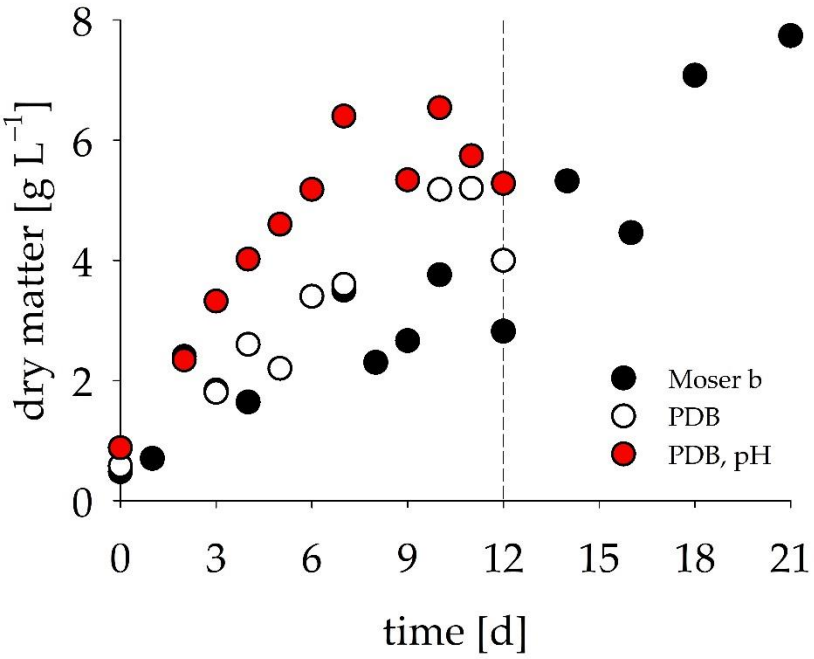


Figure S1. Influence of different media (Moser b and PDB) and pH regulation (PDB, pH) on biomass yield in a 7 L STR. The harvest of PDB cultures is marked with a dashed line.

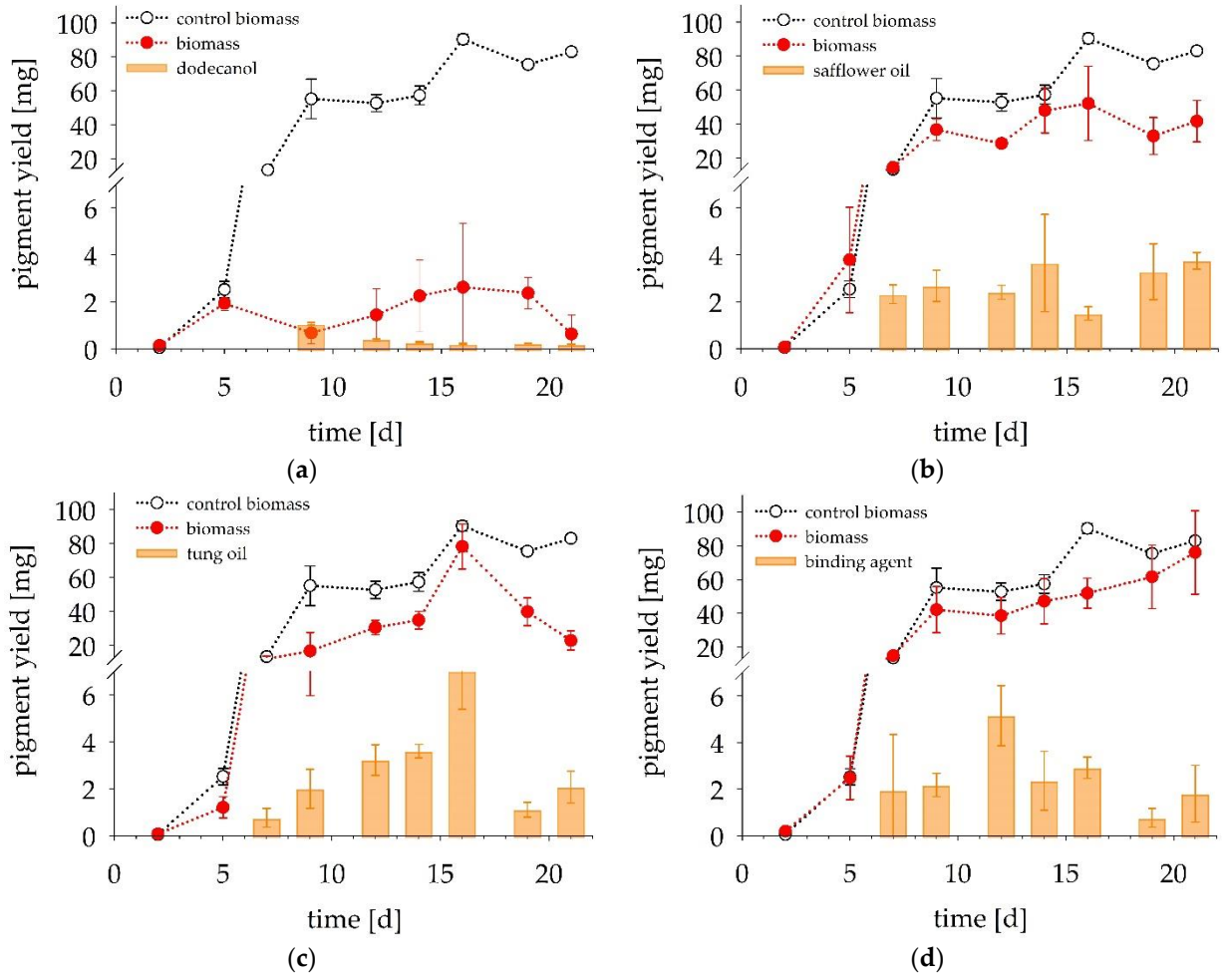


Figure S2. Laetiporic acid yields in biomass and lipophilic phase over the course of the cultivation during in situ extraction for (**a**) lauryl alcohol; (**b**) safflower oil; (**c**) tung oil and (**d**) binding agent. White dots depict the measurements for the control without second phase. The yield for the extractive phase on a certain day is the yield in the phase that was removed (and renewed) on that day of sampling.

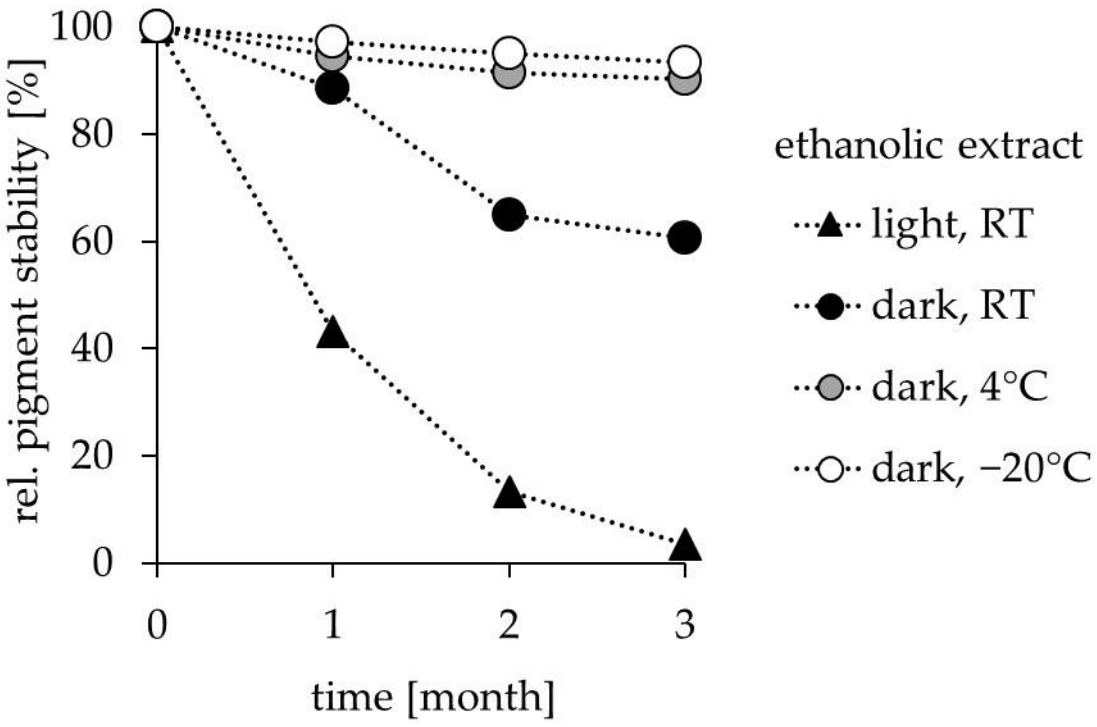
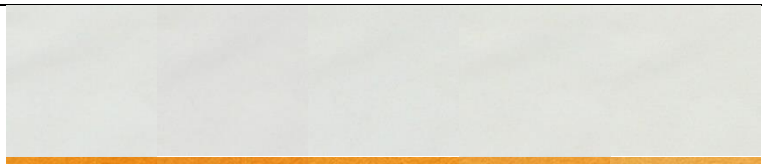


Figure S3. Preliminary stability trials with ethanolic *L. sulphureus* extracts stored under different conditions (n = 1).

Table S1. Pictures of the silk samples over time. Samples were dyed with a) *L. sulphureus* dry matter and 1 % EtOH; b) *L. sulphureus* dry matter, vinegar and 1 % EtOH; c) *L. sulphureus* dry matter and 30 % EtOH; d) wet biomass and 1 % EtOH; e) dyer's madder; f) commercially available textile dye; g) industrially dyed silk.

time [h]	1	6	12	24	48
Reference					
a					
b					
c					
d					
e					
f					
g