Title: Physicochemical characterization of 6-O-acyl trehalose fatty acid monoesters in desiccated system

Authors: Shigesaburo Ogawa, Koji Honda, Taro Tsubomura, Kiichiro Totani, Isao Takahashi, Setsuko Hara

PII: S0009-3084(18)30132-4
DOI: https://doi.org/10.1016/j.chemphyslip.2018.09.012
Reference: CPL 4688

To appear in: *Chemistry and Physics of Lipids*

Received date: 10-7-2018
Revised date: 10-9-2018
Accepted date: 19-9-2018

Please cite this article as: Ogawa S, Honda K, Tsubomura T, Totani K, Takahashi I, Hara S, Physicochemical characterization of 6-O-acyl trehalose fatty acid monoesters in desiccated system, *Chemistry and Physics of Lipids* (2018), https://doi.org/10.1016/j.chemphyslip.2018.09.012

Physicochemical characterization of 6-O-acyl trehalose fatty acid monoesters in desiccated system

Shigesaburo Ogawa[1*], Koji Honda[2], Taro Tsubomura[1], Kiichiro Totani[1], Isao Takahashi[3], Setsuko Hara[1]

[1] *Department of Materials and Life Science, Faculty of Science and Technology, Seikei University, 3-3-1 Kichijojikitamachi, Musashino-shi, Tokyo, 180-8633, Japan*

[2] *Hyogo prefectural institute of technology, yukihira-cho 3-1-12, Suma-ku, Kobe, 654-0037, Japan*

[3] *Department of Physics, School of Science and Technology, Kwansei Gakuin University, Sanda 669-1337, Japan.*

[*]Corresponding author.

E-mail address: s.ogawa@st.seikei.ac.jp (S. Ogawa)

Phone number: +81-422-37-3744

Highlights:

- TREn (n = 10, 12, 14, 16) formed LC phases such as Lα and Q phases, which became glassy LC phases below T_g (*ca.* 78 °C).
- A reversible phase transition between the Lα and the Lβ phases occurred in the glassy phase for TREn (n = 14, 16).
- A strong evidence that the hydrocarbon chain in the glassy state can be fluid-like rather than glassy-like was provided.
- TREn formed monohydrate Cr, which showed similar dehydration temperature independent on the acyl chain length.
- The glassy Lα (Lα-$_G$) phase kinetically formed when the dehydration occurred under vacuum condition below T_g.