SUPPORTING INFORMATION

Pulmonary Insulin-like Growth Factor I Delivery from Trehalose and Silk-Fibroin Microparticles

Isabel Schultz, Frederic Vollmers, Tessa Lühmann, Jens-Christoph Rybak, Ronja Wittmann[1], Katharina Stank[1], Hartwig Steckel[1], Boris Kardziev[2], Michael Schmidt[3], Petra Högger, Lorenz Meinel*

Institute for Pharmacy and Food Chemistry, University of Wuerzburg, Am Hubland, DE-97074 Wuerzburg, Germany; [1]Institute for Pharmacy, University of Kiel, Grasweg 9a, DE-24118 Kiel; [2]Thoraxzentrum Bezirk Unterfranken, DE-97702 Muennerstadt, Germany; [3]Medical Clinic and Polyclinic I, University of Wuerzburg, DE-97080 Wuerzburg, Germany
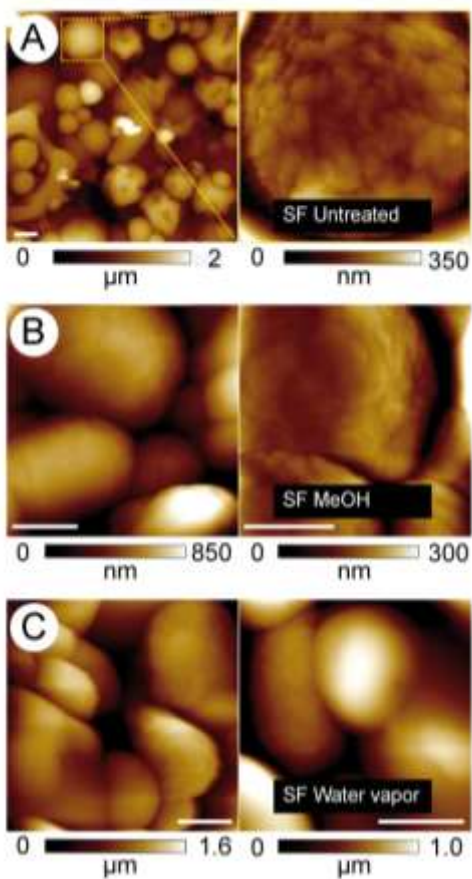
Number of pages: 5 (S1-S4).

Figure S1. AFM images of (A) untreated SF microparticles (left) with respective magnification (right), (B) methanol-treated SF and (C) water vapor-exposed SF microparticles. Color bars represent the surface roughness. Bar length is 1 μm.
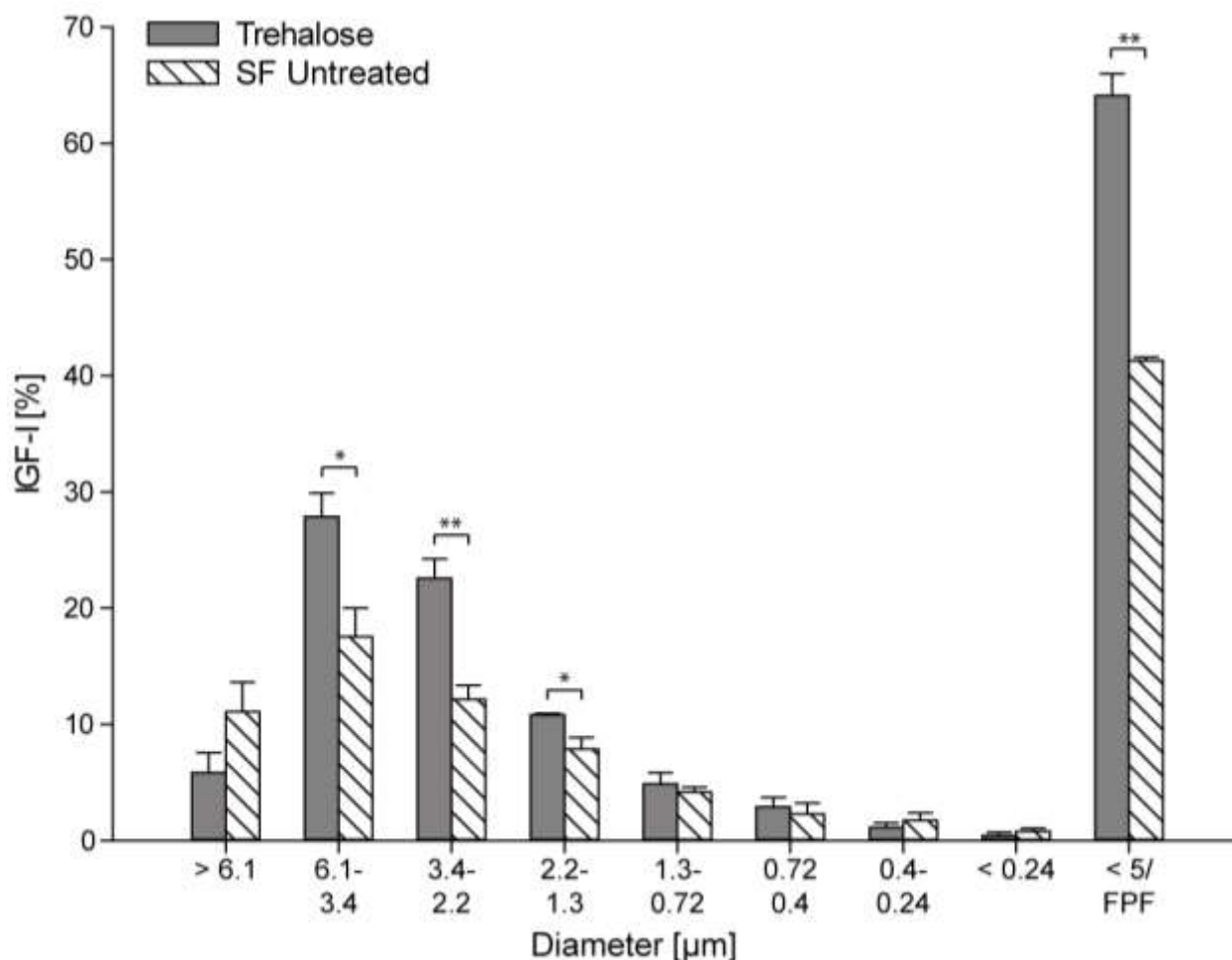
Figure S2. Distribution of IGF-I [%] on the different stages of the Next Generation Impactor after aerosolization of trehalose and untreated silk-fibroin microparticles (mean ± standard deviation; n=3). Asterisks highlight significant difference at $p < 0.05$ for stage 2 (6.1 µm–3.4 µm) and 4 (2.2 µm–1.3 µm) and two asterisks at $p < 0.01$ for stage 3 (3.4 µm–2.2 µm) and the FPF (fine particle fraction) of all microparticles. FPF is the sum of particles with a diameter ≤ 5 µm.
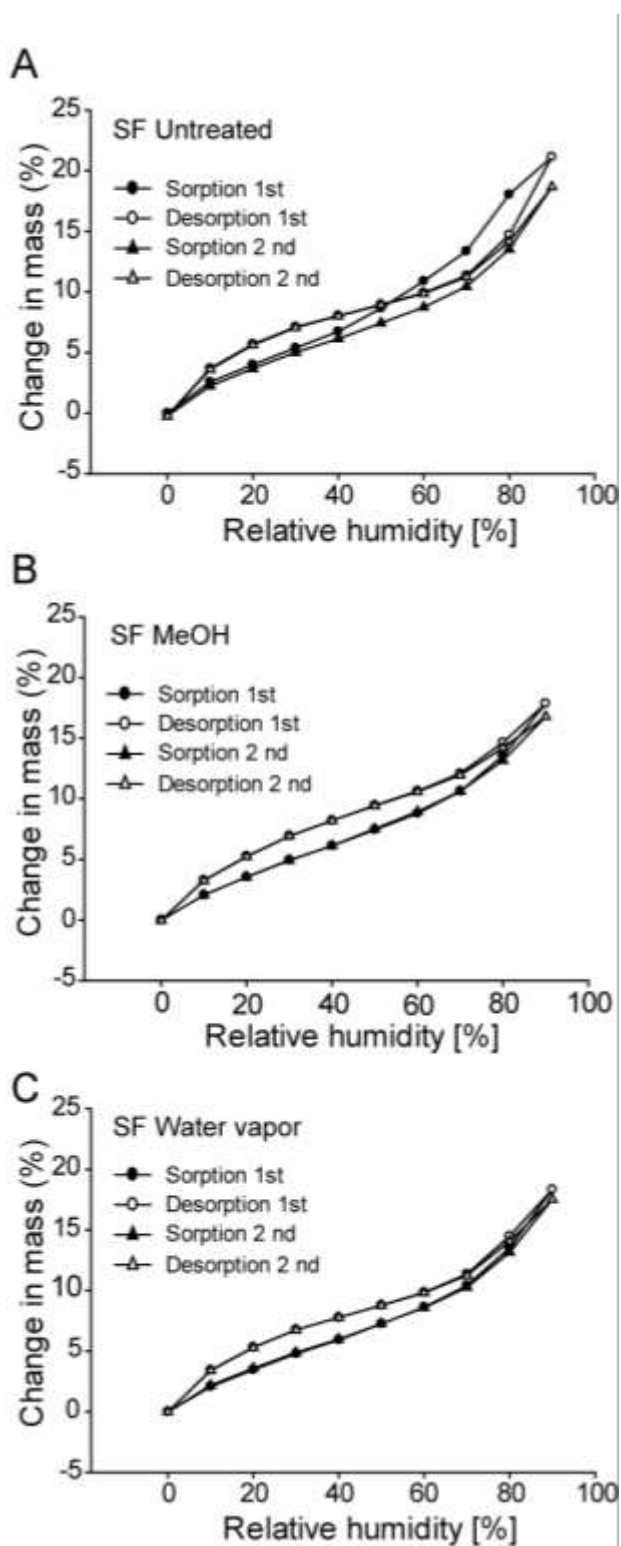
Figure S3. Water vapor isotherms of (A) untreated, (B) methanol-treated, and (C) water vapor-exposed microparticles.
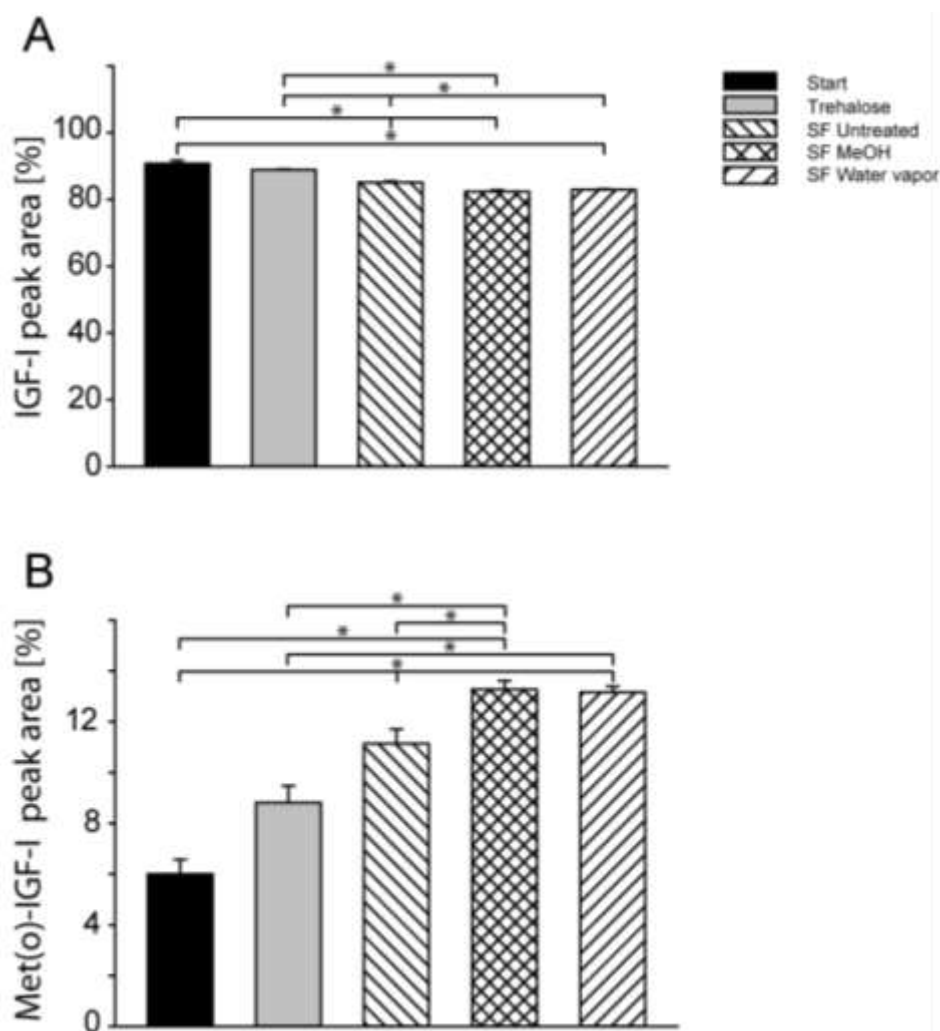
Figure S4. IGF-I degradation analysis: (A) IGF-I peak area [%] before spray drying (start) and of IGF-I released from trehalose, untreated, methanol-treated and water vapor-exposed microparticles. (B) Peak area [%] of methionine 59 oxidized IGF-I (Met(o)-IGF-I) from samples collected before spray drying (start) and from trehalose, untreated, methanol-treated and water vapor-exposed microparticles. Asterisks highlight significant difference ($p < 0.05$).