



Fig. S1. (A) Oblique sagittal slices of fat distribution (darker color resembles lower fat amount and brighter color resembles higher fat amount) and proton density (grey tones) before flight in the bark beetle *Ips typographus*. (B) Oblique coronal slices after flight. (C) NMR spectrum before flight, purple arrow indicates fat saturation pulse to obtain spectral information in the images. Quantitative analysis is shown in Table 1, beetle no. 2. (D) NMR spectrum after flight.