*animal* journal: Effects of acute and chronic heat stress on feed sorting behaviour of lactating dairy cows.

Miller-Cushon EK, Dayton AM, Horvath KC, Monteiro APA, Weng X, and Tao S

**Supplementary Material S1.** Description of statistical models (in SAS v. 9.4) used in analysis of changes in feed sorting of lactating Holstein dairy cows with exposure to evaporative cooling or no evaporative cooling (treatment = CL or HT) during heat stress conditions (average temperature-humidity index: 77.6) in two experimental periods (period = beginning at 10 d after implementing treatments, defined as acute heat stress for HT cows), and at 62 d after implementing treatments, defined as chronic heat stress for HT cows).

Placeholder values used in models:

‘fraction’ = sorting index for long, medium, short, or fine

‘baselinefraction’ = sorting index for long, medium, short, or fine during baseline period

‘physiologicalmeasure’ = respiration rate or body temperature

**Model 1:** Testing within treatment and period for sorting of each fraction (difference in sorting index from 100)

proc sort;

by period treatment;

proc ttest h0=100;

var fraction;

by period treatment;

run;

**Model 2:** Testing for effects of treatment and time period on sorting of each fraction

proc mixed;

class period treatment cow;

model fraction = treatment\*period treatment period baselinefraction/;

repeated period/type=cs sub=cow;

lsmeans treatment\*period / diff adjust=tukey;

run;

**Model 3:** Testing for associations between sorting of each fraction and physiological measures indicative of response to heat stress

proc mixed;

class period treatment cow;

model fraction = physiologicalmeasure /ddfm=kr solution;

random cow;

by period;

run;