

SUPPLEMENTARY DATA

Supplementary Table 1. Effect of acetoacetate on VMN GE, GI and NG neurons.

	2.5 mmol/L glucose			0.5 mmol/L glucose		
	% of total	AA Excited	AA Inhibited	% of total	AA Excited	AA Inhibited
GE	11±1	29±6 ^a	10±5 ^b	10±2	54±17 ^a	16±11 ^a
GI	9±2	72±11 ^a	3±3 ^b	9±3	43±13 ^a	25±7 ^a
NG	80±3	22±4 ^a	14±3 ^a	81±2	33±7 ^a	17±5 ^a
Total	100 (330)	27±3 (97) ^a	13±2 (42) ^b	100 (347)	35±7 (112) ^a	17±7 (70) ^a

At 2.5 and 0.5 mmol/L glucose, neurons were classified by glucosensing categories by alterations in $[Ca^{2+}]_i$ oscillations as glucose was changed from 2.5 to 0.5 to 2.5 mmol/L or 0.5 to 2.5 to 0.5 mmol/L respectively. They were then held at 2.5 or 0.5 mmol/L glucose and exposed to 1 μmol/l acetoacetate (AA) and classified as AA excited or inhibited or non-responsive. Data are in percent of total neurons tested in each category. Total = total percent of each category of neurons for each AA category, irrespective of their glucosensing properties, with the number of neurons tested in each group divided by the total number tested in parentheses. Data with differing superscripts in a given category differ from each other by $P < 0.05$ by one way ANOVA followed by post-hoc T-test.

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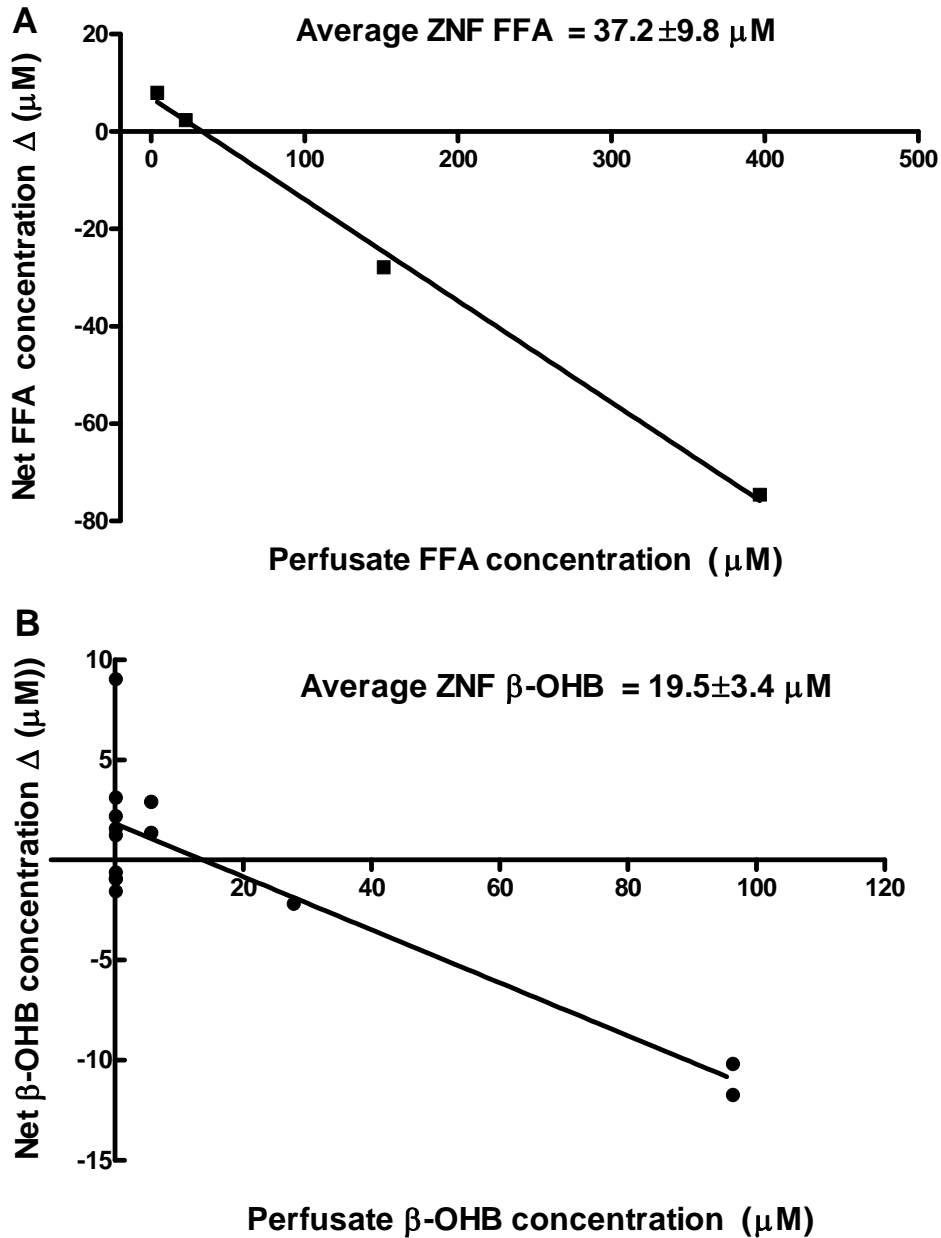
Supplementary Table 2. Effect of acetoacetate on VMN oleic acid (OA) excited (OAE), inhibited (OAI) and non-sensing (OAN) neurons.

	2.5 mmol/L glucose			0.5 mmol/L glucose		
	% of total	AA Excited	AA Inhibited	% of total	AA Excited	AA Inhibited
OAE	24±7	64±15 ^a	16±10 ^b	37±6	74±14 ^a	4±5 ^b
OAI	13±6	5±5 ^a	45±13 ^b	10±4	16±11 ^b	44±13 ^b
OAN	62±12	30±8 ^a	27±5 ^a	53±12	39±13 ^a	10±6 ^a
Total	100 (252)	34±8 (85) ^a	27±5 (71) ^a	100 (347)	50±13 (150) ^a	11±5 (45) ^b

At 2.5 and 0.5 mmol/L glucose, VMN neurons were classified as OA excited (OAE) or in inhibited (OAI) or non-responsive (OAN) by alterations in $[Ca^{2+}]_i$ oscillations produced by exposure to 15 nmol/L OA. They were then exposed to 1 μ mol/L acetoacetate (AA) in the presence of 15 nmol/L OA and were then classified as AA excited or inhibited. Data are in percent of total neurons tested in each category. Total = total percent of each category of neurons for each AA category, irrespective of their OA sensing properties, with the number of neurons tested in each group divided by the total number tested in parentheses. Data with differing superscripts in a given category differ from each other by $P < 0.05$ by one way ANOVA followed by post-hoc T-test.

SUPPLEMENTARY DATA

Supplementary Figure 1. Representative Zero-Net Flux studies for VMH FFA (A) β -OHB levels (B) in two different individual rats 24h fasted rats. Y-axis represents the difference between the FFA concentrations infused into and coming out of the microdialysis probe ($\Delta \mu\text{M}$). X-axis represents the FFA perfusate concentration (amount infused into the probe). Zero-net flux (ZNF) represents the point at which the calculated regression line crosses zero on the Y-axis.



SUPPLEMENTARY DATA

Supplementary Figure 2. Representative changes in $[Ca^{2+}]_i$ oscillations following exposure to oleic acid and ketone bodies (β -OHB and AA) in freshly dissociated VMN neurons from 3-4 wk old male Sprague-Dawley rats. The neurons were first characterized by their glucosensing category in response to altering glucose concentrations from 2.5 (2.5G) to 0.5 (0.5G) to 2.5 mM (2.5G) followed by 15 nmol/L oleic acid (OA), 20 μ mol/L β -OHB and 1 μ mol/L AA. Neurons were tested terminally with 20 nM glutamate (Glut) to ascertain viability. **A:** Glucose-excited/ OAI neuron and ketone bodies excited showing increased $[Ca^{2+}]_i$ oscillations; **B:** Glucose-inhibited/ OAE neuron/ Ketone bodies inhibited showing decreased $[Ca^{2+}]_i$ oscillations. Areas under the curve (AUC) for $[Ca^{2+}]_i$ oscillations in response to changes in conditions are given over each 10 min segment of tracing.

