

Supplementary Materials

To

Characterization of rat cardiovascular system by anacrotic/dicrotic notches in the condition of increase/decrease of NO bioavailability

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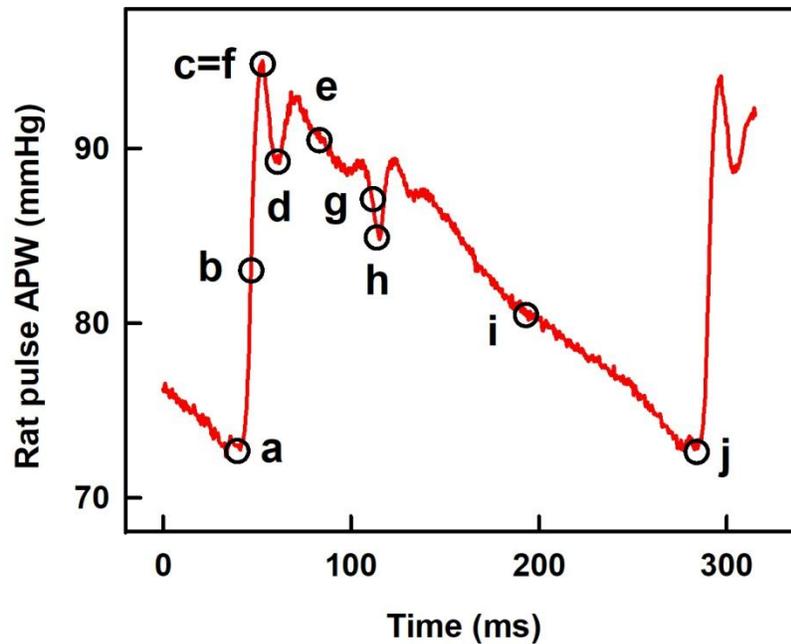


Figure S1. Ten points, a – j, on rat arterial pulse waveform (APW).

Description of 35 hemodynamic parameters (HPs) from APW.

Blood pressure and time position of ten points, a – j, on APW were used to define and calculate specific HP (Figure S1). For more details see Kurakova et al. 2020 (DOI: 10.1113/EP088148) and Misak et al. 2020 (doi.org/10.1155/2020/6578213).

Plot (a): Systolic blood pressure in mmHg; point c or f.

Plot (b): Heart rate in min^{-1} ; $60 / (j - a)$; $(j - a)$ represents time interval between a and j, a and j are two reference points to diastolic BP value.

Plot (c): Systolic area in mmHg s ; integral BP of a to h; h refers to BP at the dicrotic notch (dicrotic BP).

Plot (d): dP/dt_{max} in mmHg ms^{-1} ; maximum derivative at the point b; P is BP in mmHg.

Plot (e): dP/dt_{max} relative level; relative level (shortly RL) of point b; $(b - a) / (c \text{ (or f)} - a)$ in mmHg/mmHg (dimensionless).

Plot (f): dP/dt_d in mmHg ms^{-1} ; negative maximum derivative at the point i; the point i is the BP at the middle of the time interval between h and j.

Plot (g): dP/dt_d relative level, relative level of point i; $(i - a) / (c \text{ (or f)} - a)$ in mmHg/mmHg (dimensionless).

Plot (h): $dP/dt_d - dP/dt_{\text{max}}$ in s; time interval between b and i, $dP/dt_d - dP/dt_{\text{max}} = (i - b)$.

Plot (i): $dP/dt_d - dP/dt_{min}$ in s; time interval between **g** and **i**, $dP/dt_d - dP/dt_{min} = (i - g)$; dP/dt_{min} is negative maximum derivative at the point **g**.

Plot (j): Diastolic blood pressure in mmHg; the point **a** or **j**.

Plot (k): Pulse BP in mmHg; $(c - a)$ or $(f - a)$.

Plot (l): Diastolic area in mmHg s; integral BP of **h** to **j**.

Plot (m): dP/dt_{min} in mmHg ms^{-1} ; dP/dt_{min} is maximum negative derivative at the point **g**.

Plot (n): dP/dt_{min} relative level, relative level of point **g**; $(g - a) / (c \text{ (or } f) - a)$ in mmHg/mmHg (dimensionless).

Plot (o): dP/dt_{min} delay in s; delay in s of point **g**; $(g - a)$ time interval between **a** and **g**.

Plot (p): dP/dt_d delay in s; delay in s of point **i**; $(i - a)$ time interval between **a** and **i**.

Plot (q): $dP/dt_d - dP/dt_{max}$ in mmHg; $(i - b)$ BP difference between **b** and **i**.

Plot (r): $dP/dt_d - dP/dt_{min}$ in mmHg; $(i - g)$ BP difference between **g** and **i**.

Plot (aa): Systolic blood pressure in mmHg; point **c** or **f**. Plot (aa) is the same as (a).

Plot (bb): Anacrotic notch in mmHg; BP at the point **d**.

Plot (cc): Anacrotic notch relative level; relative level of point **d**; $(d - a) / (c \text{ (or } f) - a)$ in mmHg/mmHg (dimensionless).

Plot (dd): Anacrotic notch delay in ms; delay in ms of point **d**; $(d - a)$ time interval between **a** and **d**.

Plot (ee): Anacrotic notch relative delay; relative delay (shortly RD) of point **d**; $(d - a) / (j - a)$ in ms/ms (dimensionless)

Plot (ff): [Dicrotic notch (DiN) in s] - [Anacrotic notch (AnN) in s] in s; $(h - d)$ time interval between **d** and **h**.

Plot (gg): $[(DiN - AnN) \text{ in s}] / [dP/dt_{min} \text{ in mmHg } \mu s^{-1}]^*$ in s/mmHg μs^{-1} ; $(h - d) / g$.

Plot (hh): $[(DiN - AnN) \text{ in s}] / [dP/dt_{max} \text{ in mmHg } \mu s^{-1}]$ in s/mmHg μs^{-1} ; $(h - d) / b$.

Plot (ii): [AnN in ms] - [1Max (point **c** or the 1th. maximum) in ms] in ms; $(d - c)$ time interval between **c** and **d**.

Plot (jj): Augmentation index relative; $(f - c) / (f - a)$ in mmHg/mmHg (dimensionless).

Plot (kk): Dicrotic notch in mmHg; BP at the point **h**.

Plot (ll): Dicrotic notch relative level; relative level of point **h**; $(h - a) / (c \text{ (or } f) - a)$ in mmHg/mmHg (dimensionless).

Plot (mm): Dicrotic notch delay in ms, delay in ms of point **h**; $(h - a)$.time interval between **a** and **h**.

Plot (nn): Dicrotic notch relative delay; relative delay of point **h**; $(h - a) / (j - a)$; in ms/ms (dimensionless)

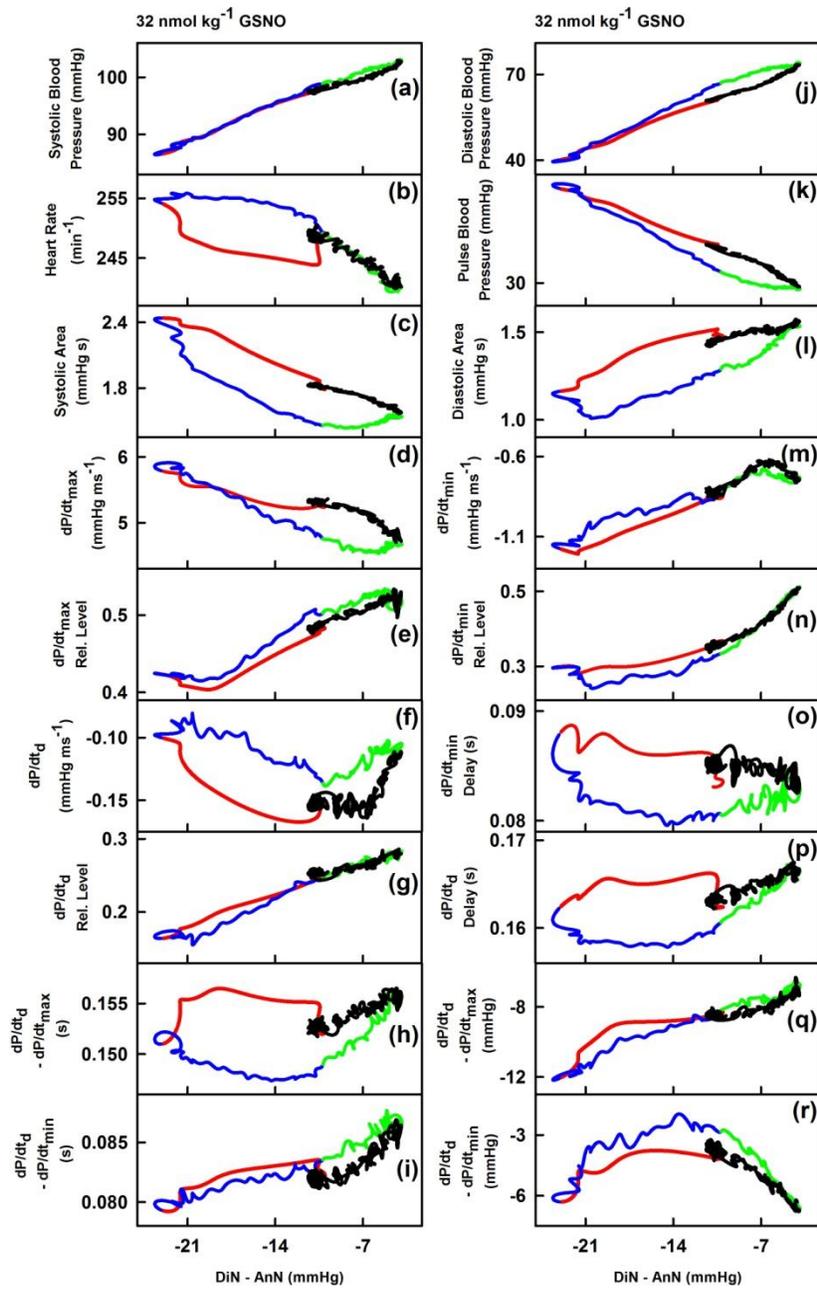
Plot (oo): [DiN in mmHg] - [AnN in mmHg] in mmHg; $(h - d)$ BP difference between **d** and **h**;

Plot (pp): $[(DiN - AnN) \text{ in mmHg}] / [dP/dt_{min} \text{ in mmHg } ms^{-1}]$ in mmHg/mmHg ms^{-1} ; $(h - d) / g$;

Plot (qq): $[(DiN - AnN) \text{ in mmHg}] / [dP/dt_{max} \text{ in mmHg } ms^{-1}]$ in mmHg/mmHg ms^{-1} ; $(h - d) / b$.

Plot (rr): [AnN in mmHg] - [1Max (point **c** or the 1th. maximum) in mmHg] in mmHg; $(d - c)$ BP difference between **c** and **d**.

*Units in plots (gg), (hh), (pp) and (qq) are informative only.



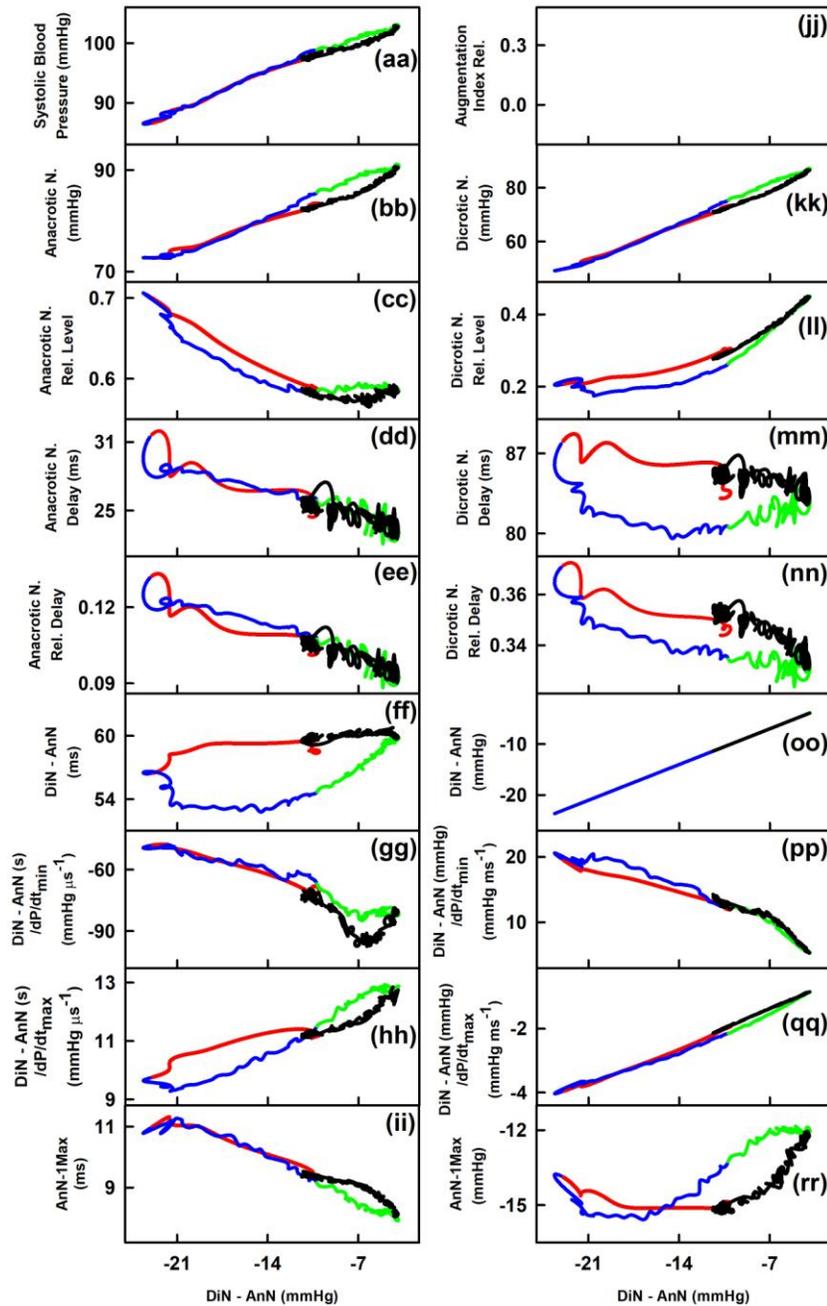
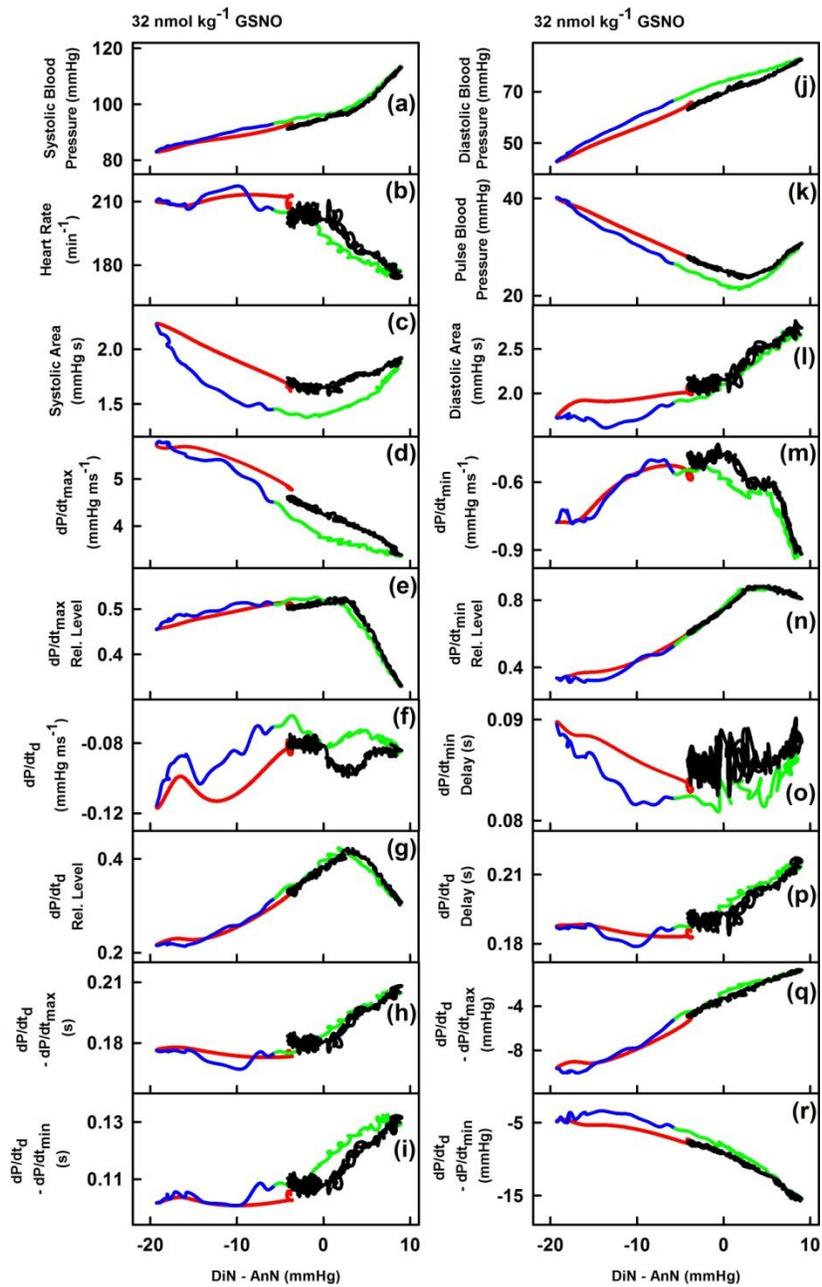


Figure S2A. Relationships of HPs to the blood pressure (BP) interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg^{-1} S-nitrosoglutathione (GSNO). The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop $> 5 \text{ mmHg}$ of DiN-AnN. The non-hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop $\leq 5 \text{ mmHg}$ of DiN-AnN.



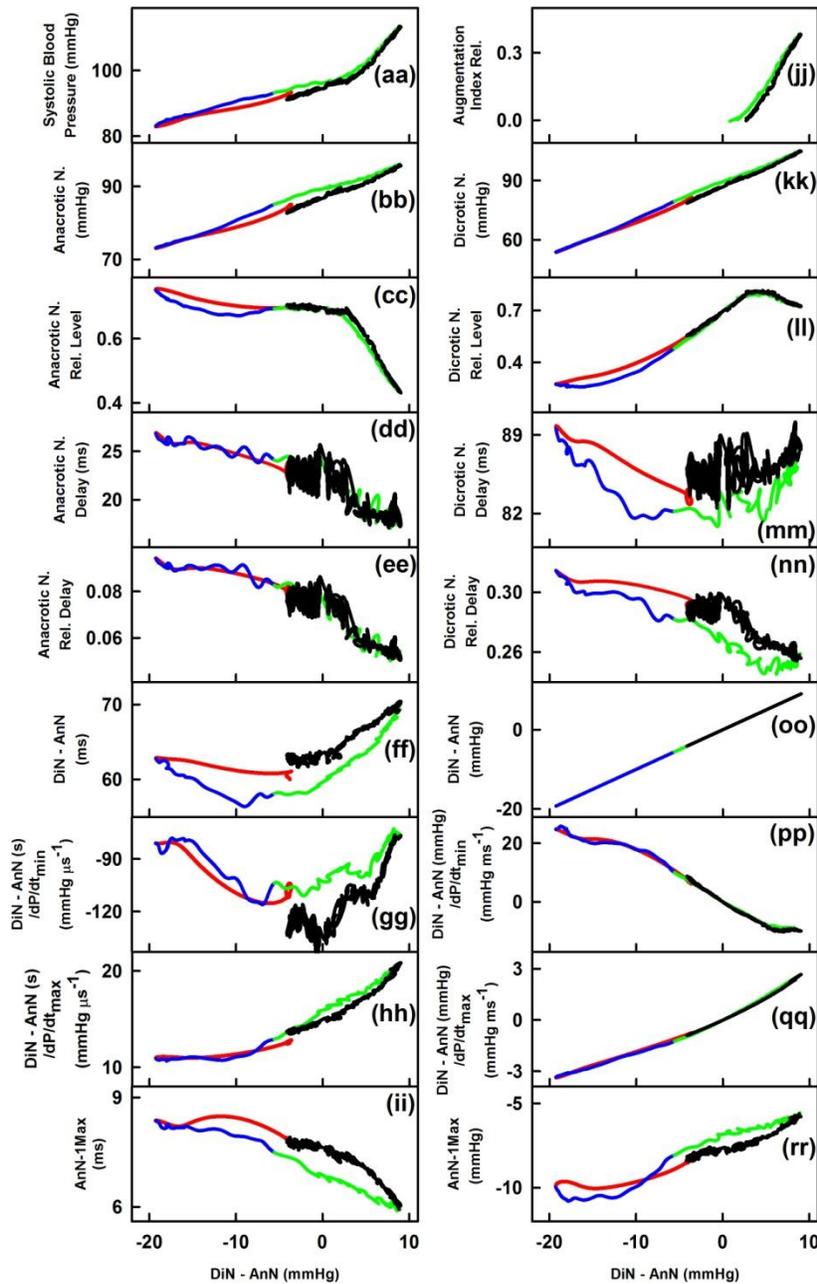
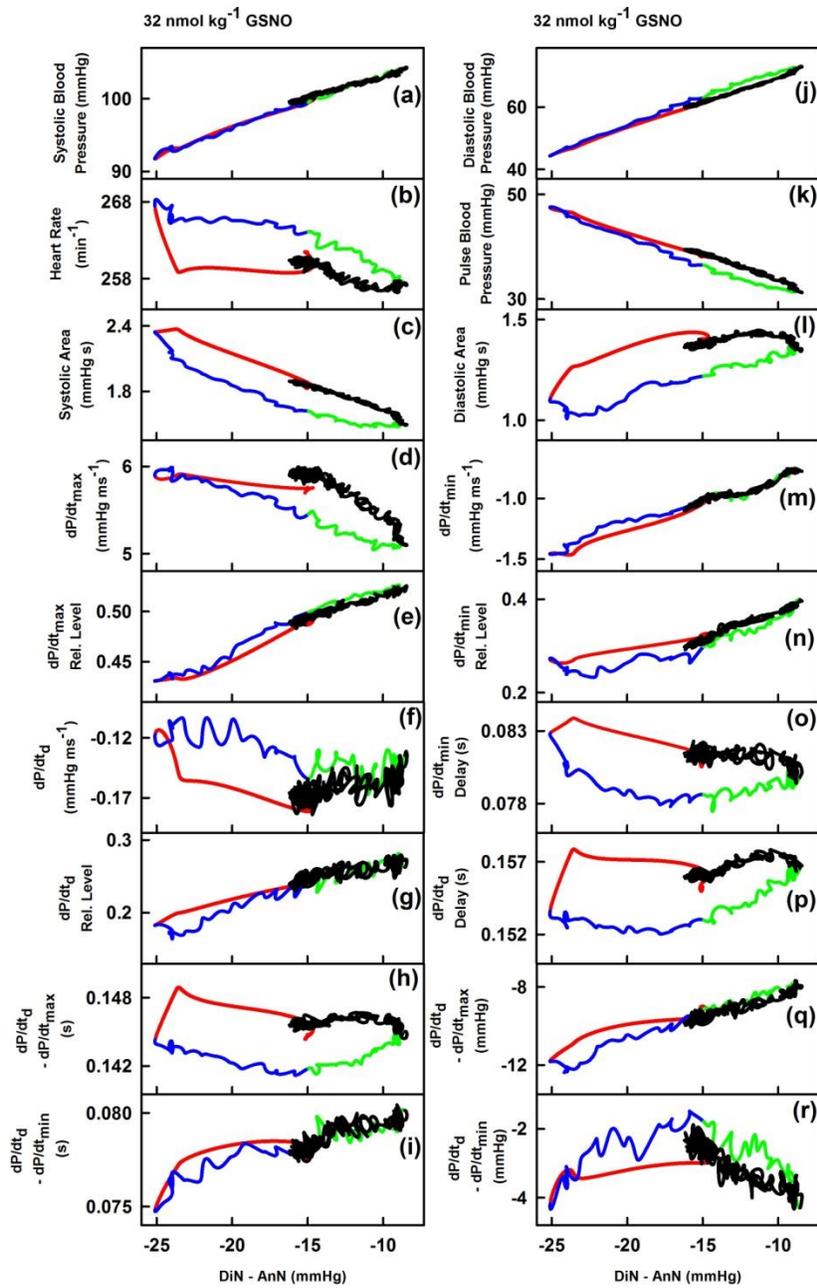


Figure S2B. Relationships of HPs to the BP interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg⁻¹ GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop > 5 mmHg of DiN-AnN. The non-hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop ≤ 5 mmHg of DiN-AnN.



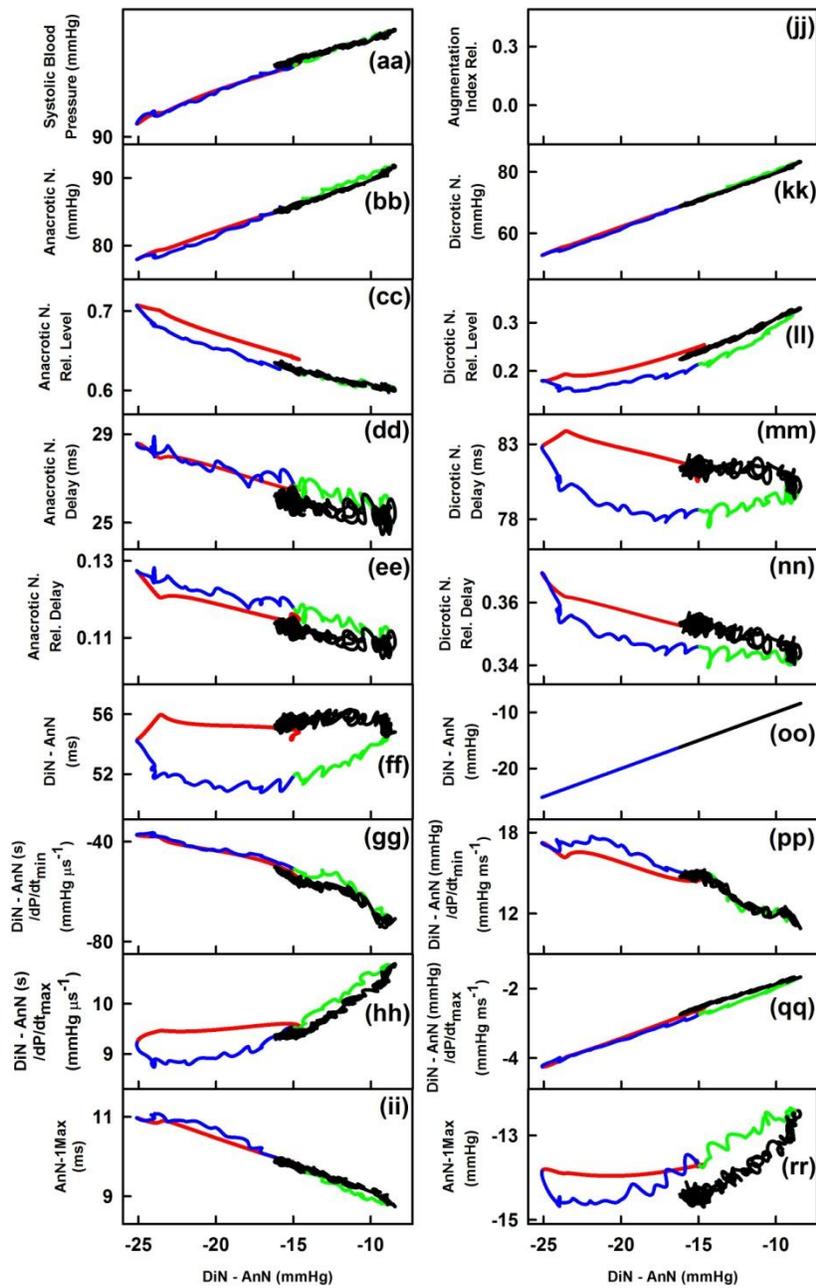
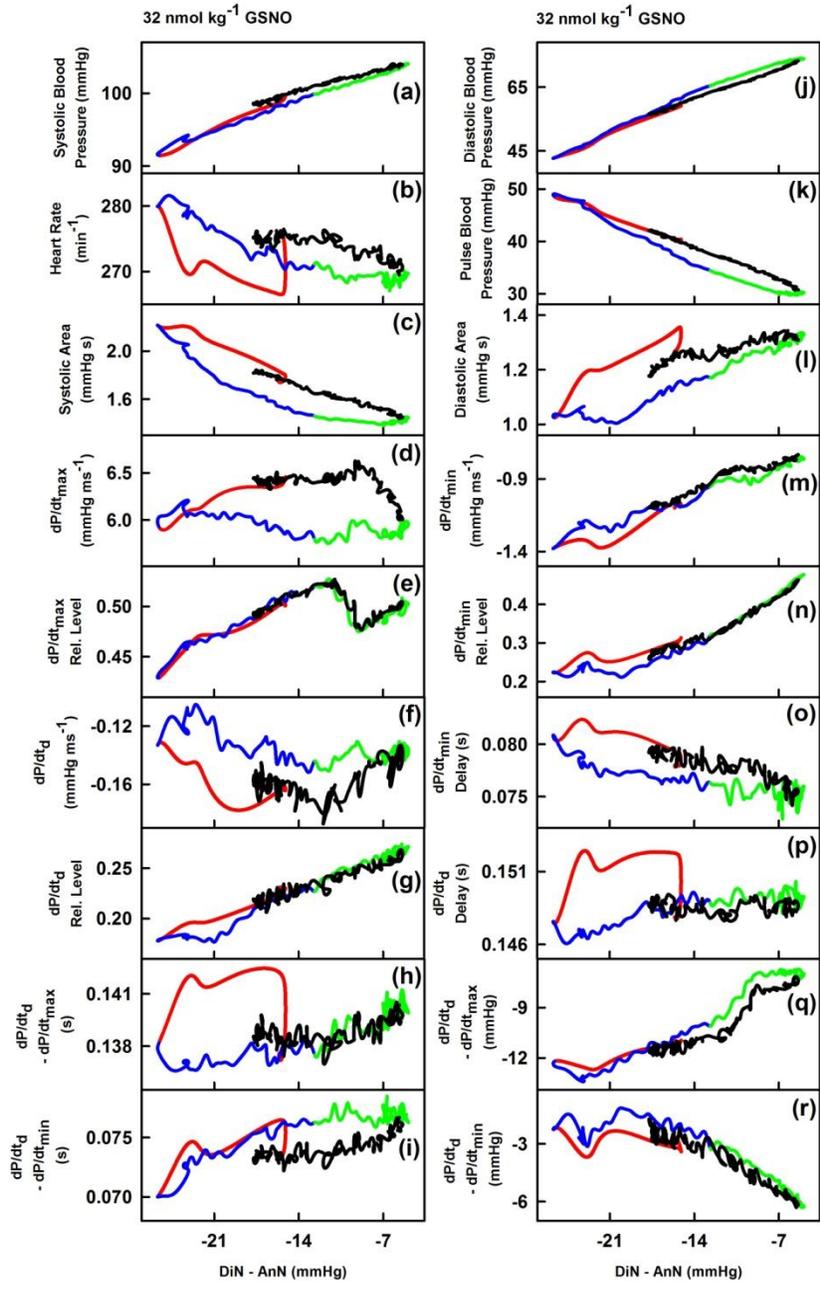


Figure S2C. Relationships of HPs to the BP interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg⁻¹ GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop > 5 mmHg of DiN-AnN. The non-hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop ≤ 5 mmHg of DiN-AnN.



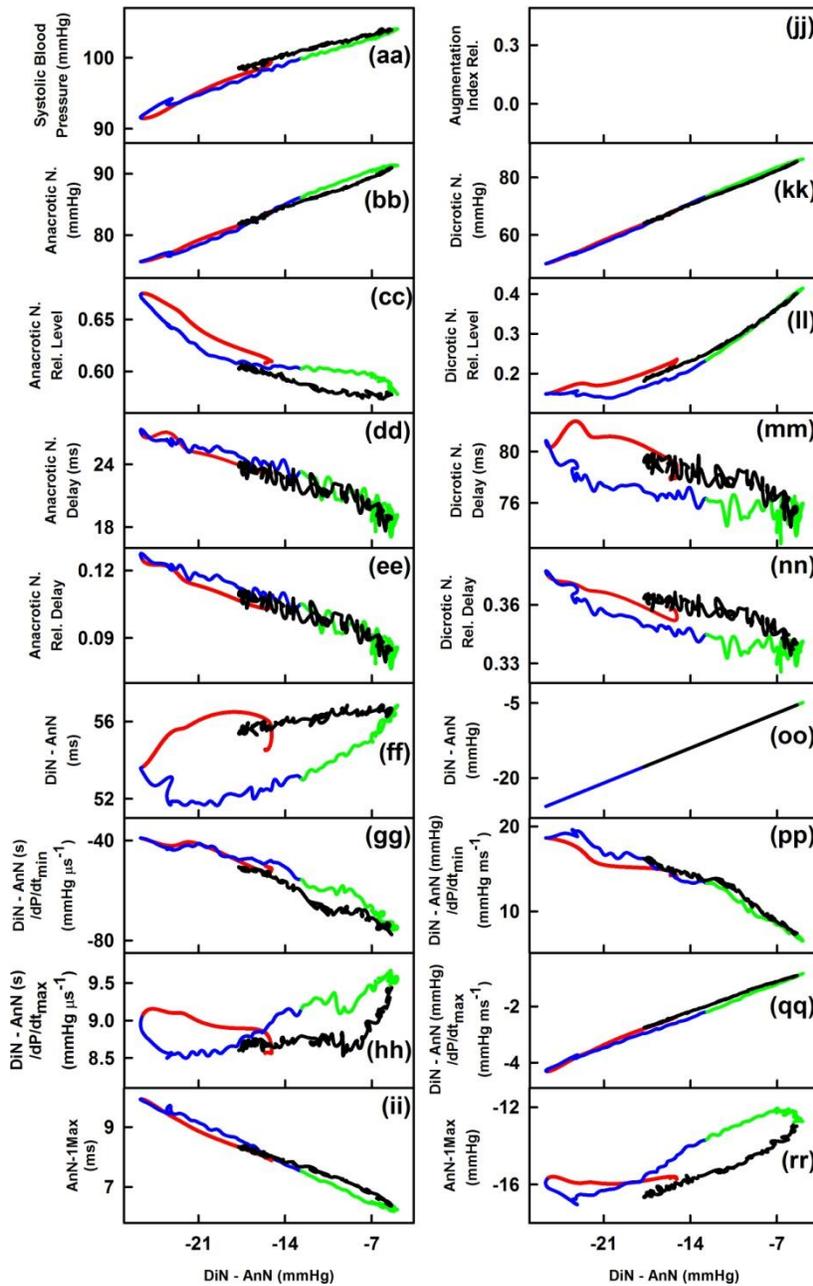
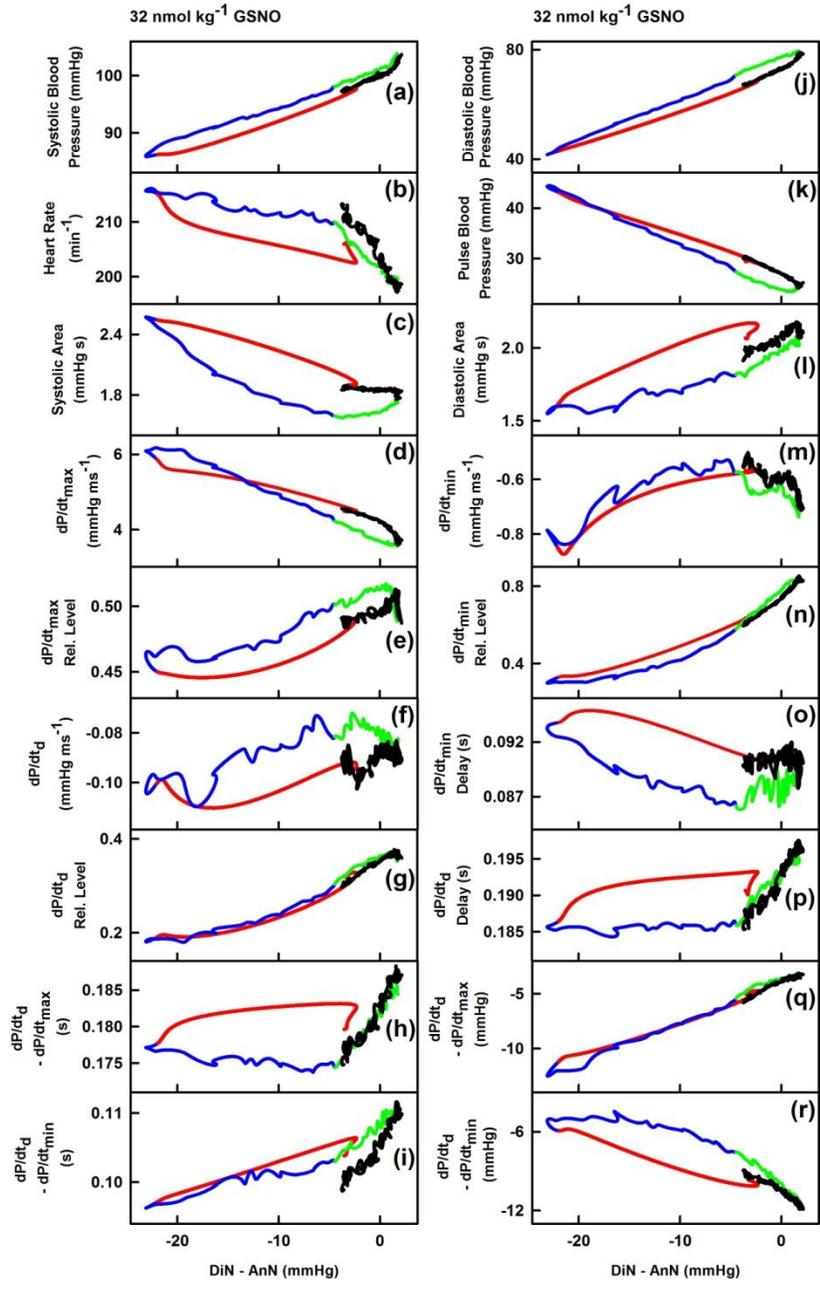


Figure S2D. Relationships of HPs to the BP interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg^{-1} GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop $> 5 \text{ mmHg}$ of DiN-AnN. The non-hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop $\leq 5 \text{ mmHg}$ of DiN-AnN.



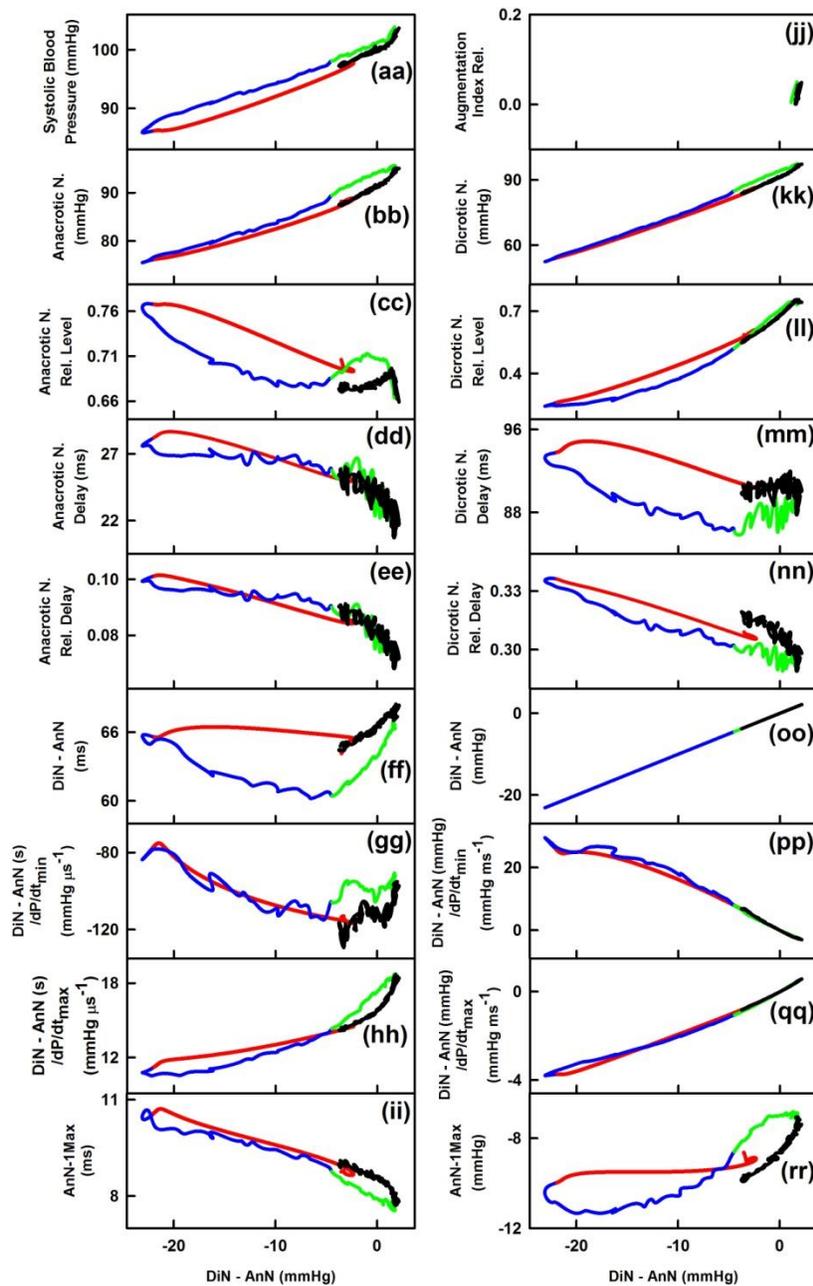
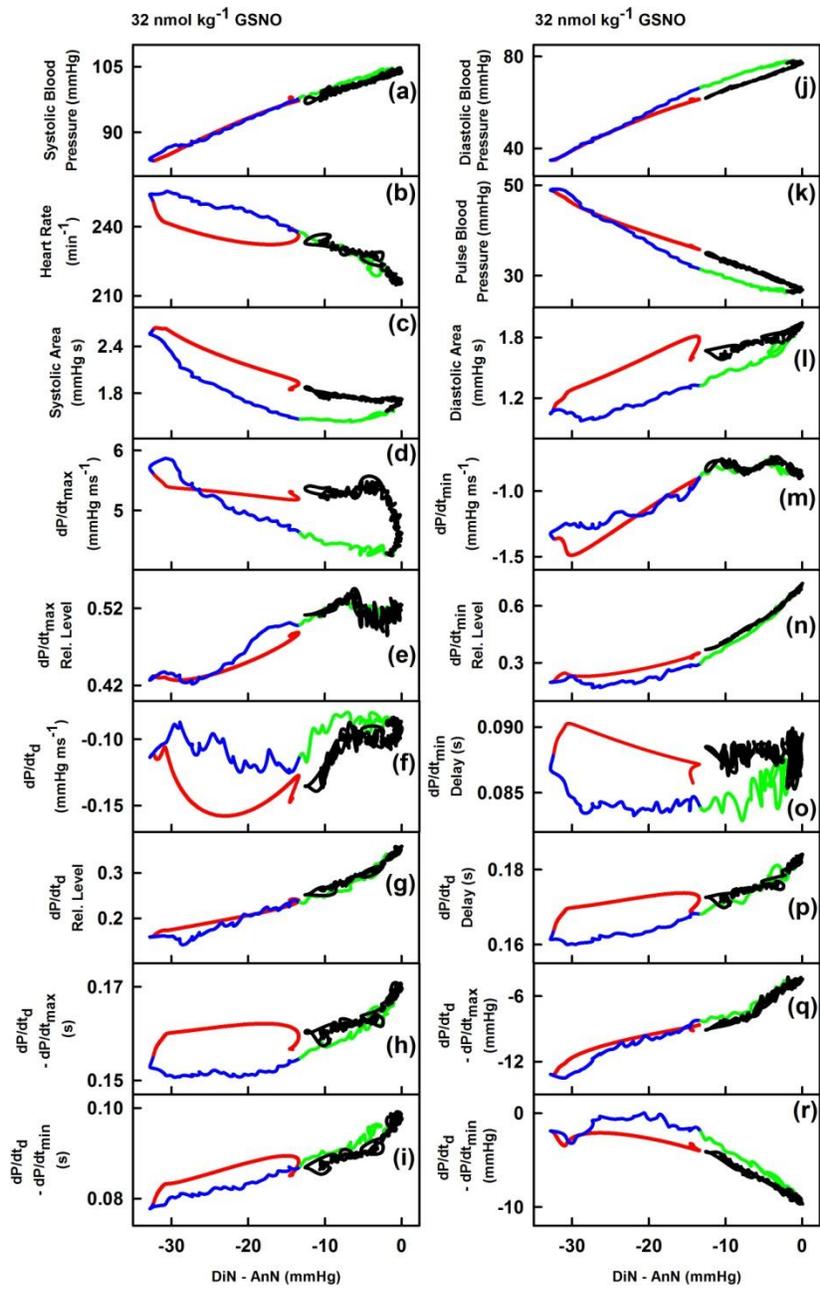


Figure S2E. Relationships of HPs to the BP interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg^{-1} GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop $> 5 \text{ mmHg}$ of DiN-AnN. The non-hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop $\leq 5 \text{ mmHg}$ of DiN-AnN.



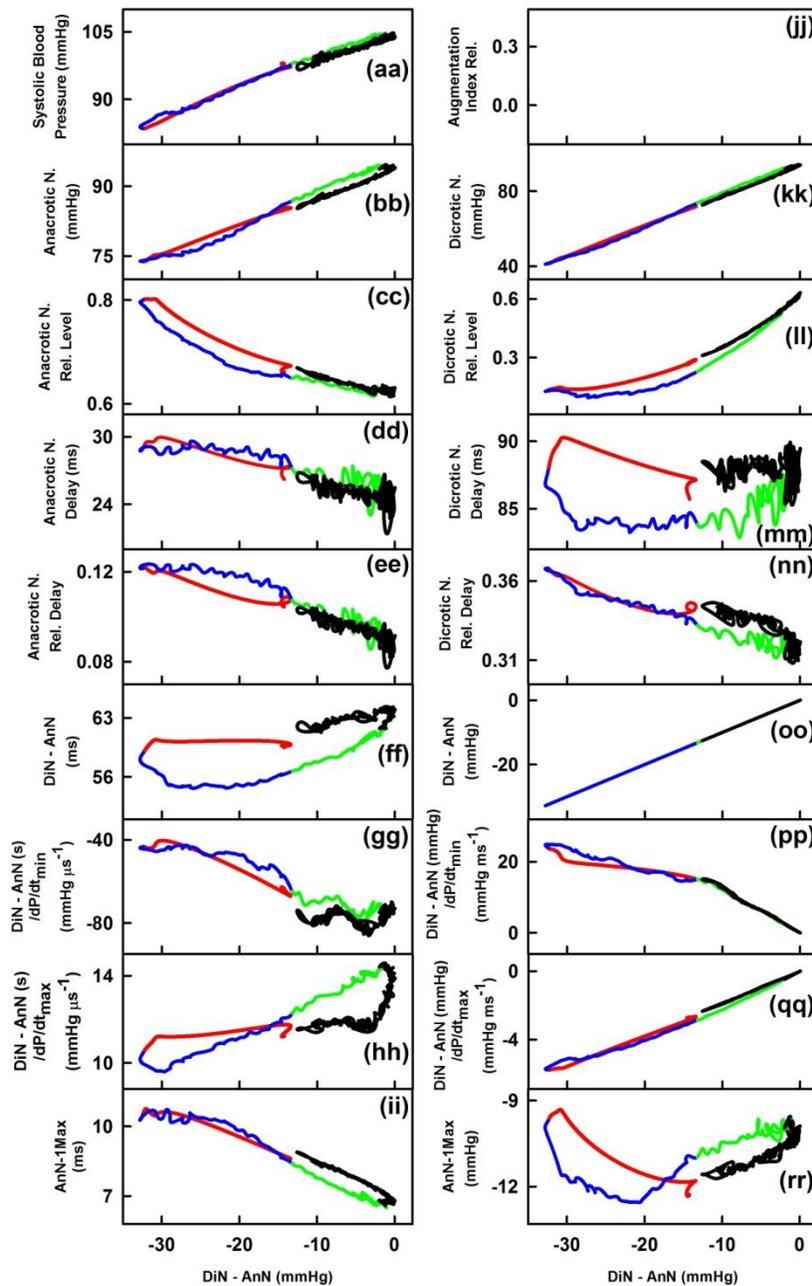
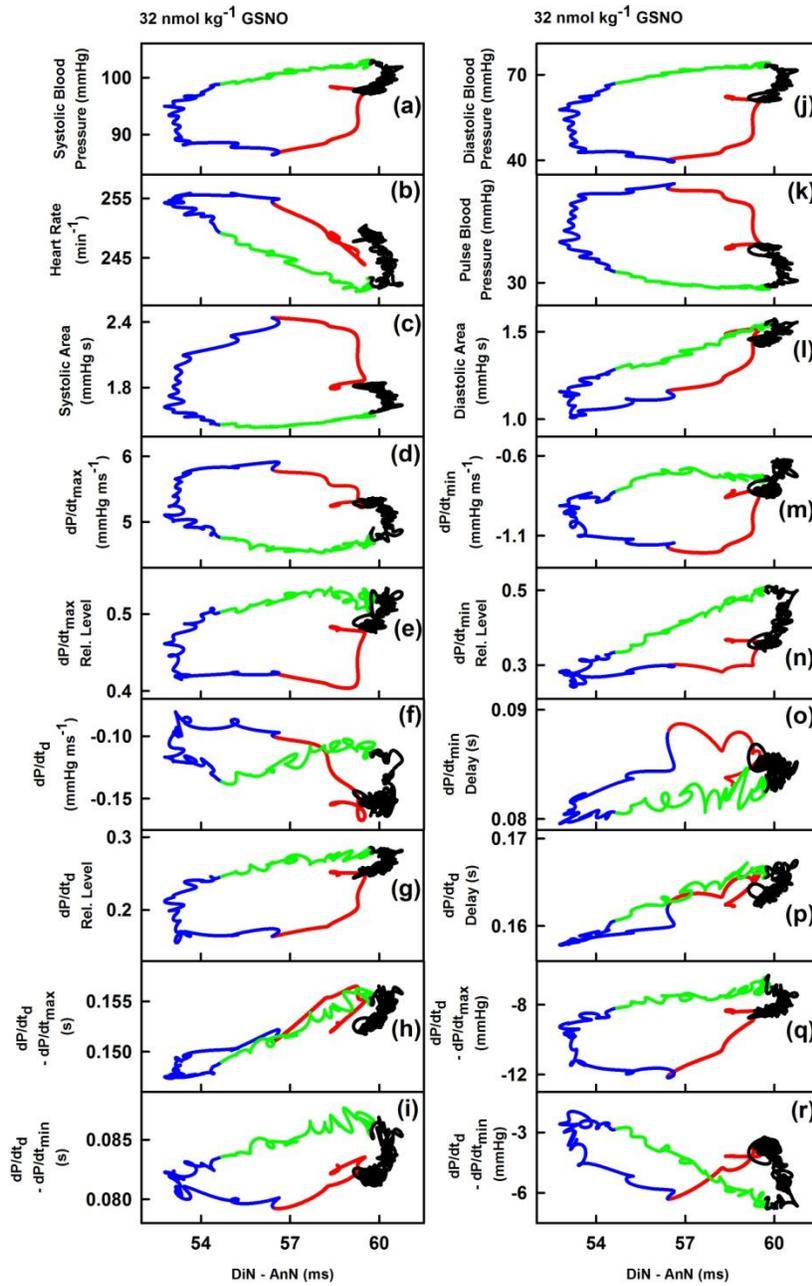


Figure S2F. Relationships of HPs to the BP interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg⁻¹ GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop > 5 mmHg of DiN-AnN. The non-hysteresis was arbitrary defined as HPs-(DiN-AnN in mmHg) loop ≤ 5 mmHg of DiN-AnN.



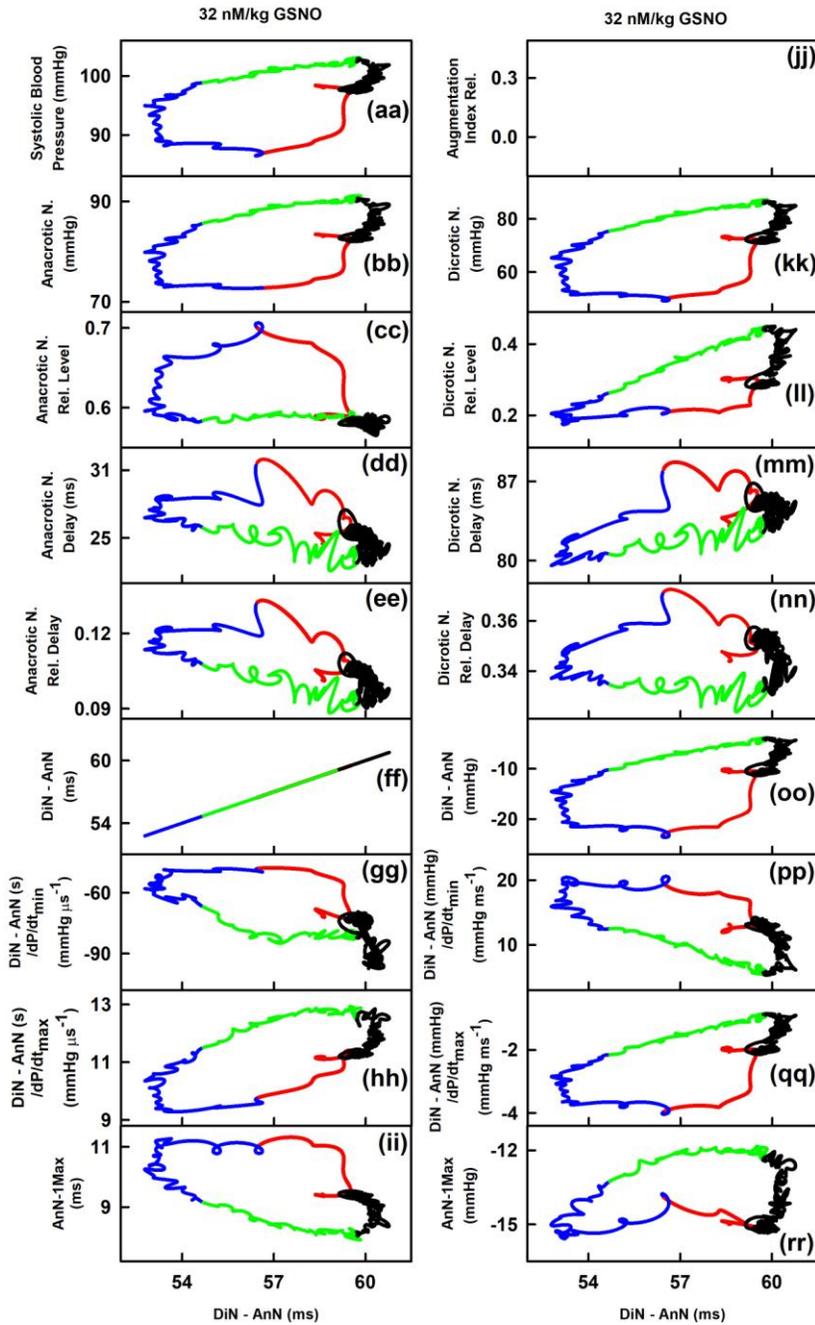
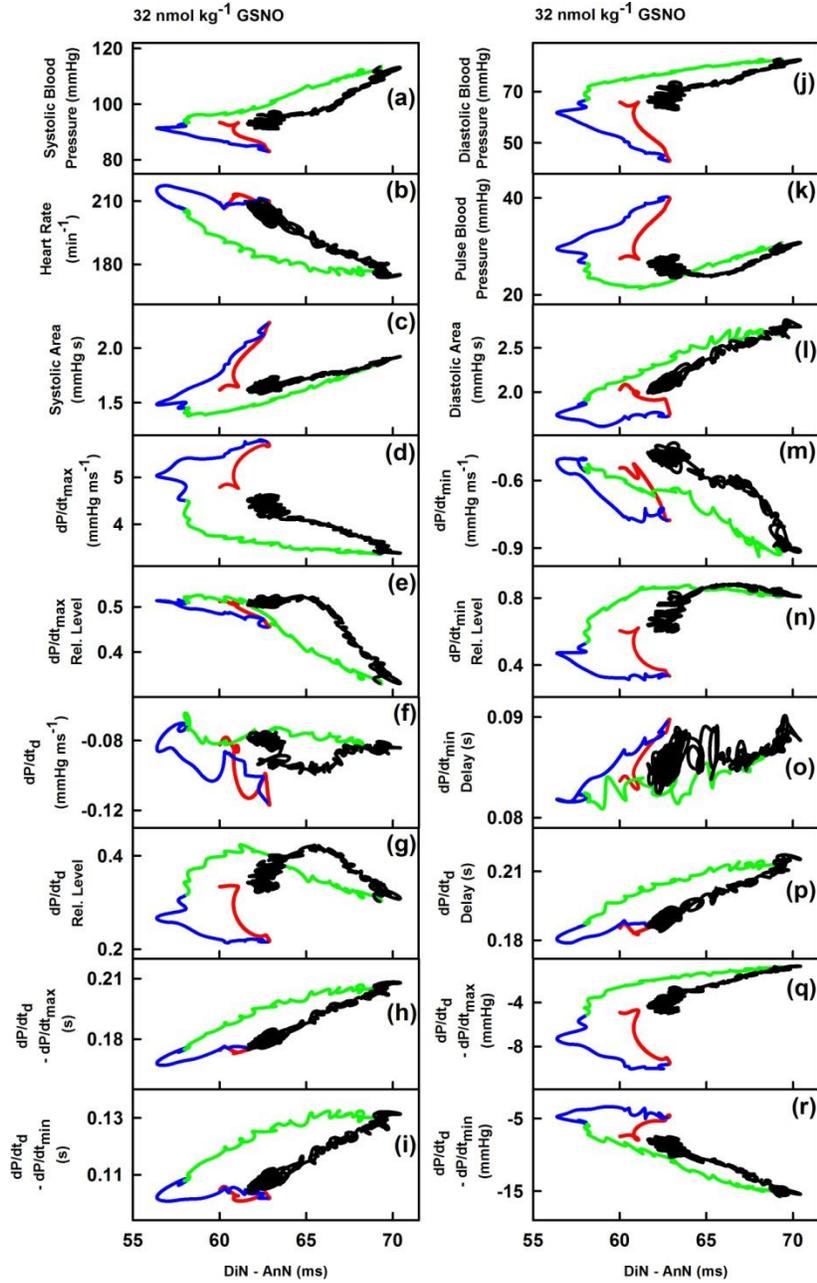


Figure S3A. Relationships of HPs to the time interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg⁻¹ GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in ms) loop > 3 ms of DiN-AnN.



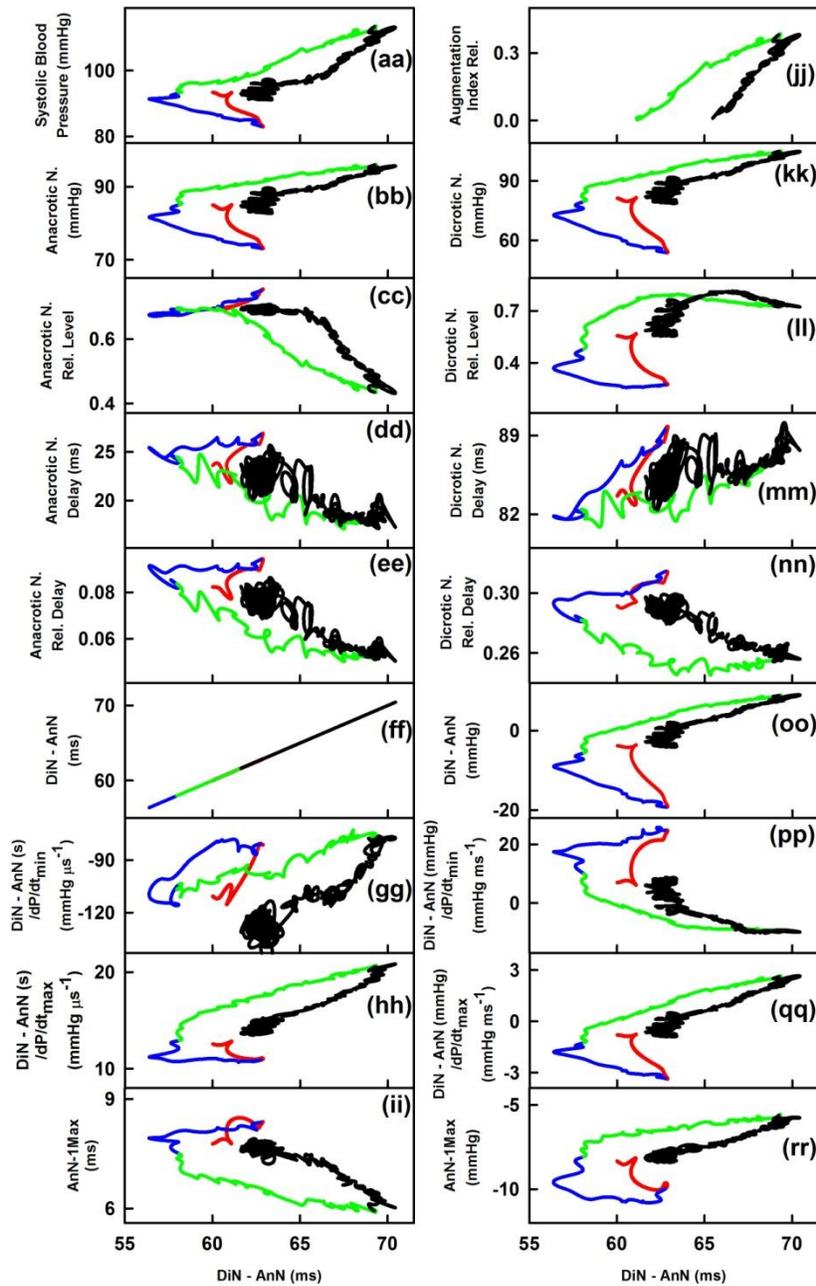
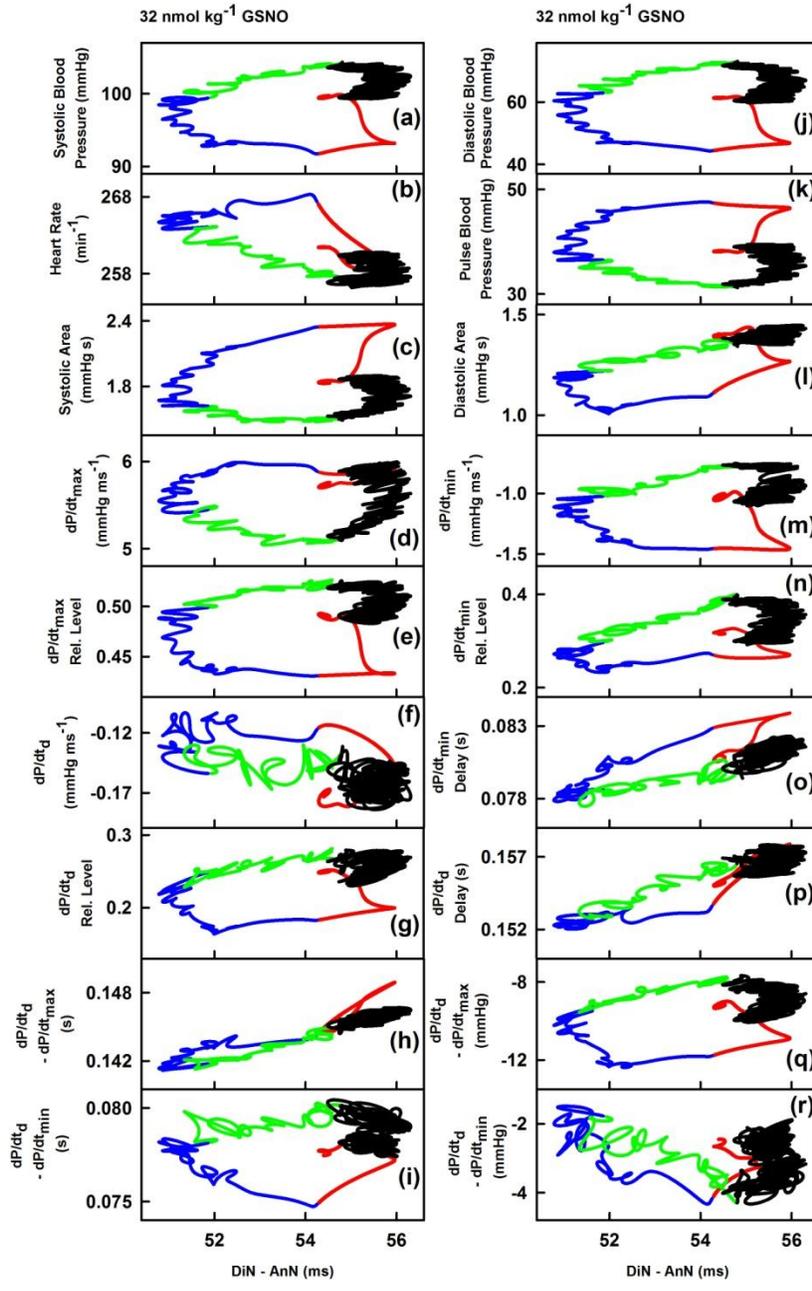


Figure S3B. Relationships of HPs to the time interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg⁻¹ GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in ms) loop > 3 ms of DiN-AnN.



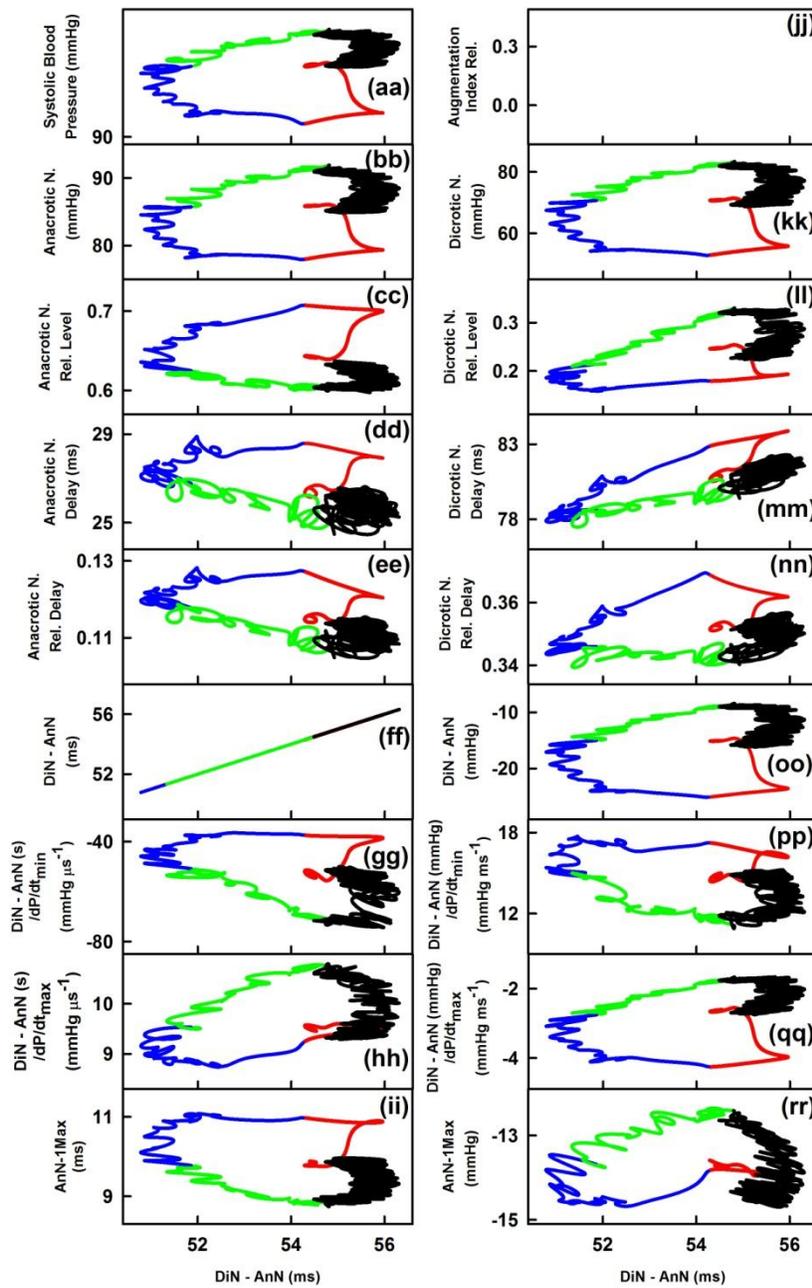
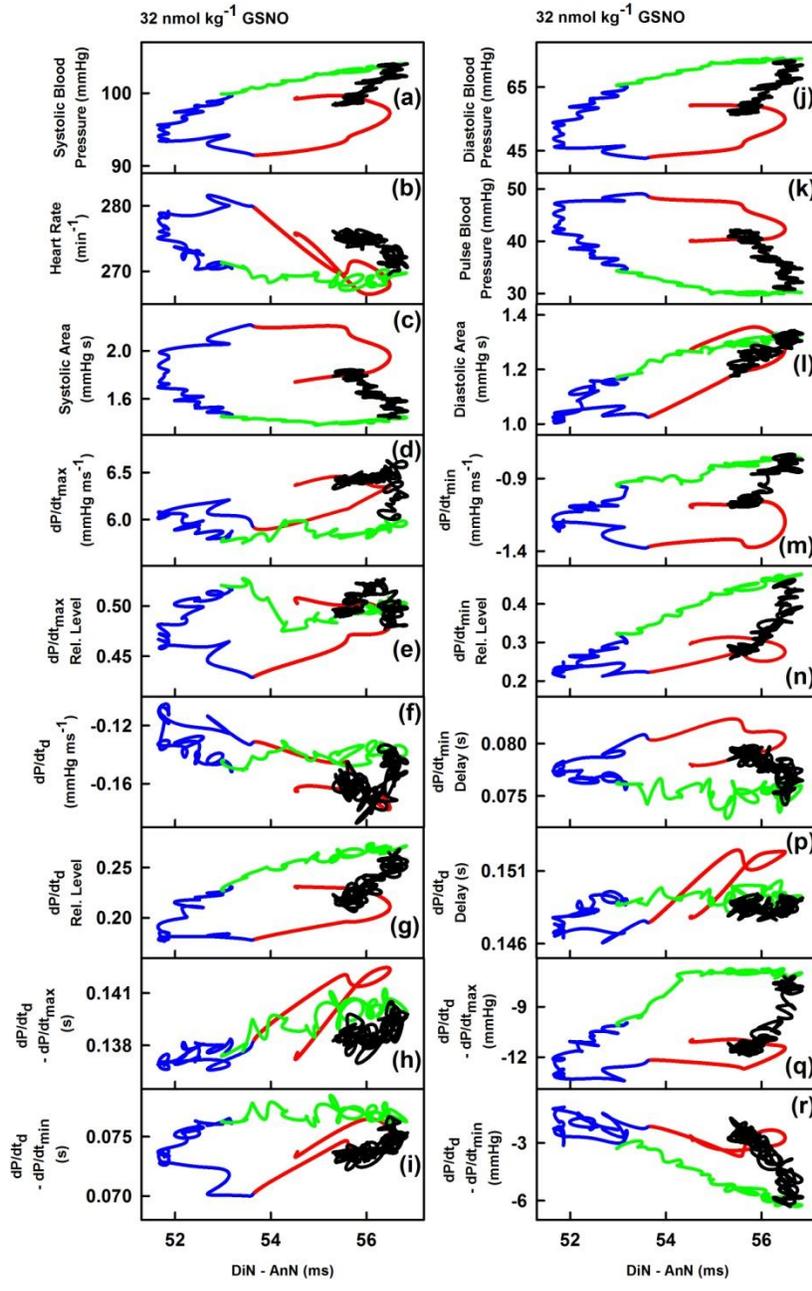


Figure S3C. Relationships of HPs to the time interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg⁻¹ GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in ms) loop > 3 ms of DiN-AnN.



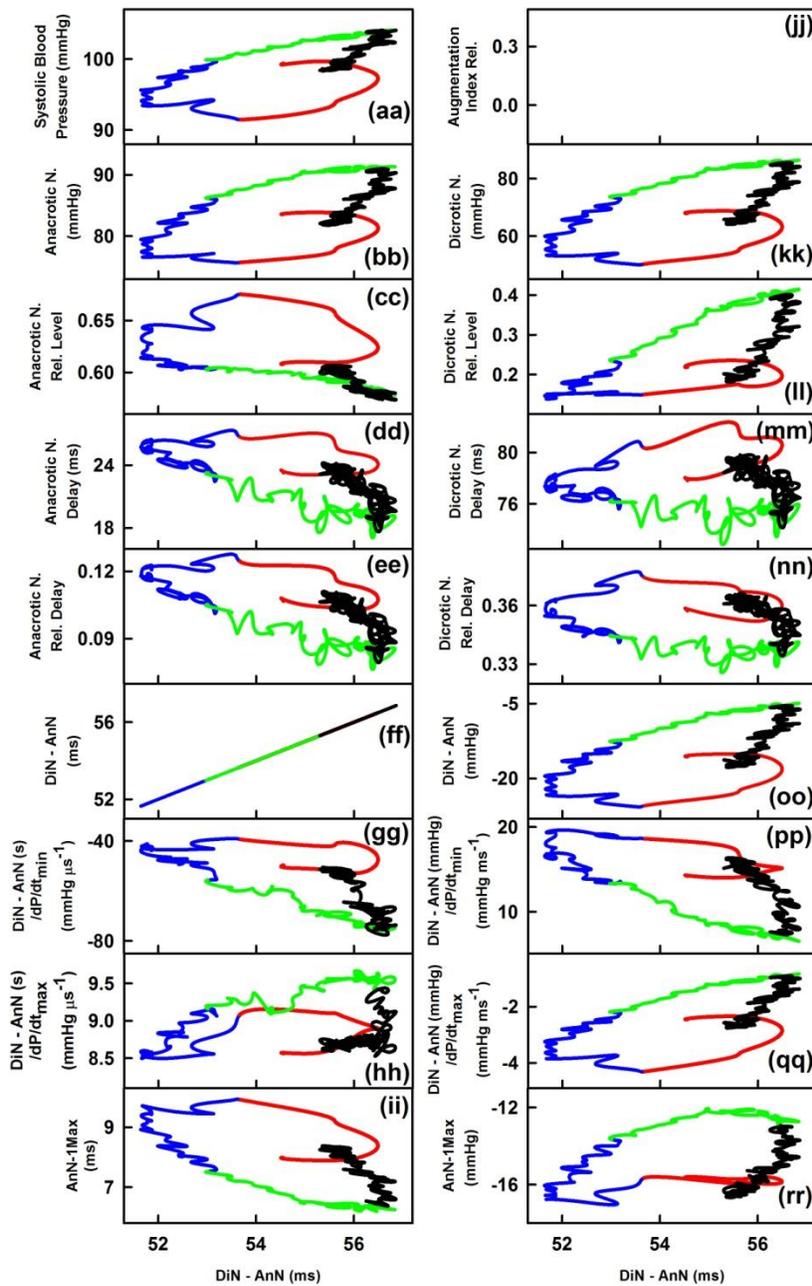
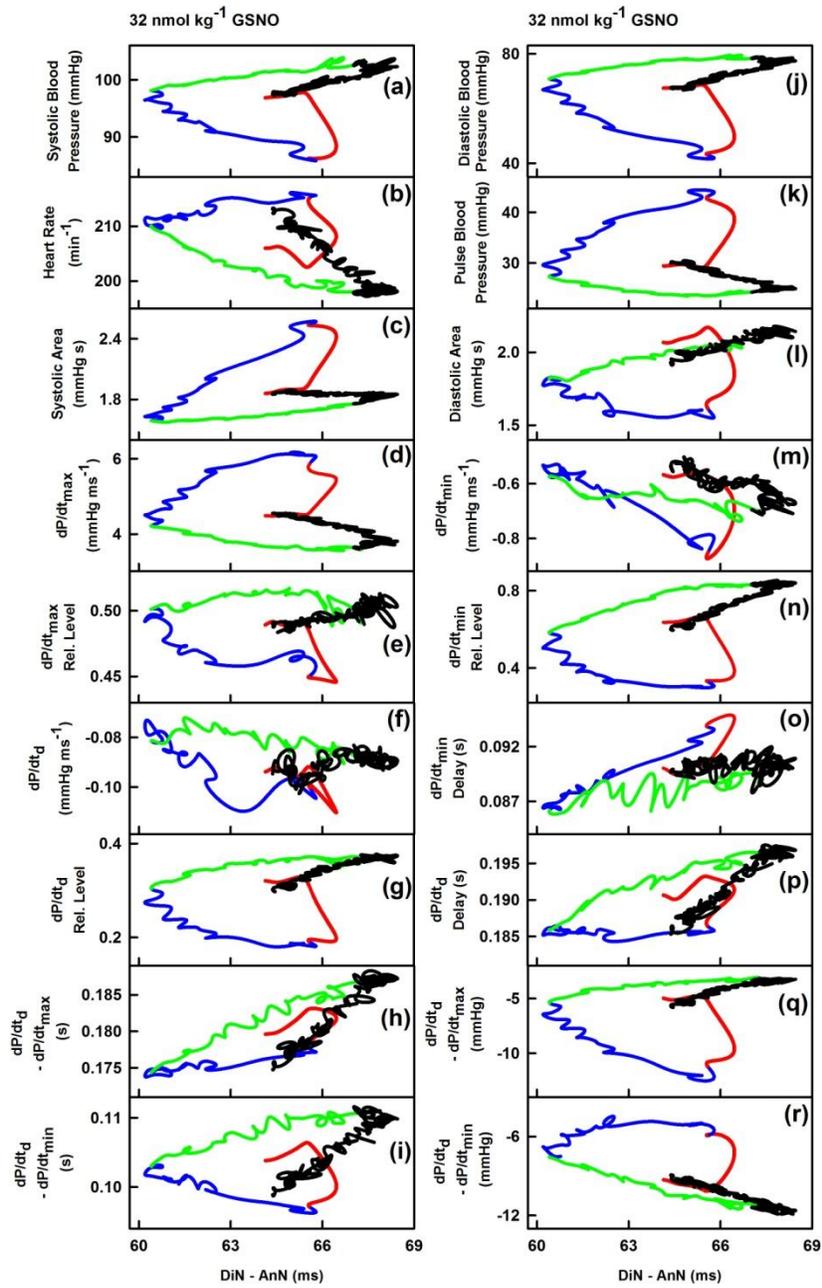


Figure S3D. Relationships of HPs to the time interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg⁻¹ GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in ms) loop > 3 ms of DiN-AnN.



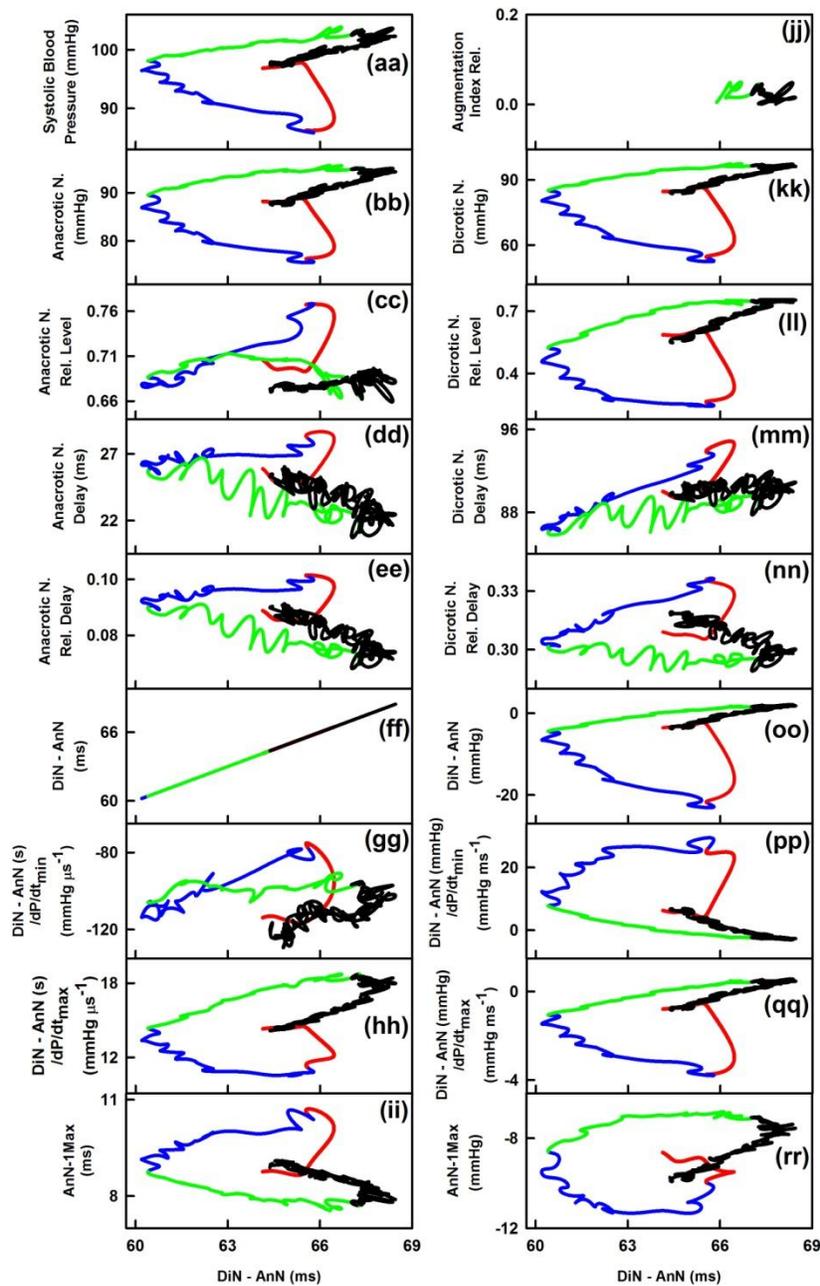
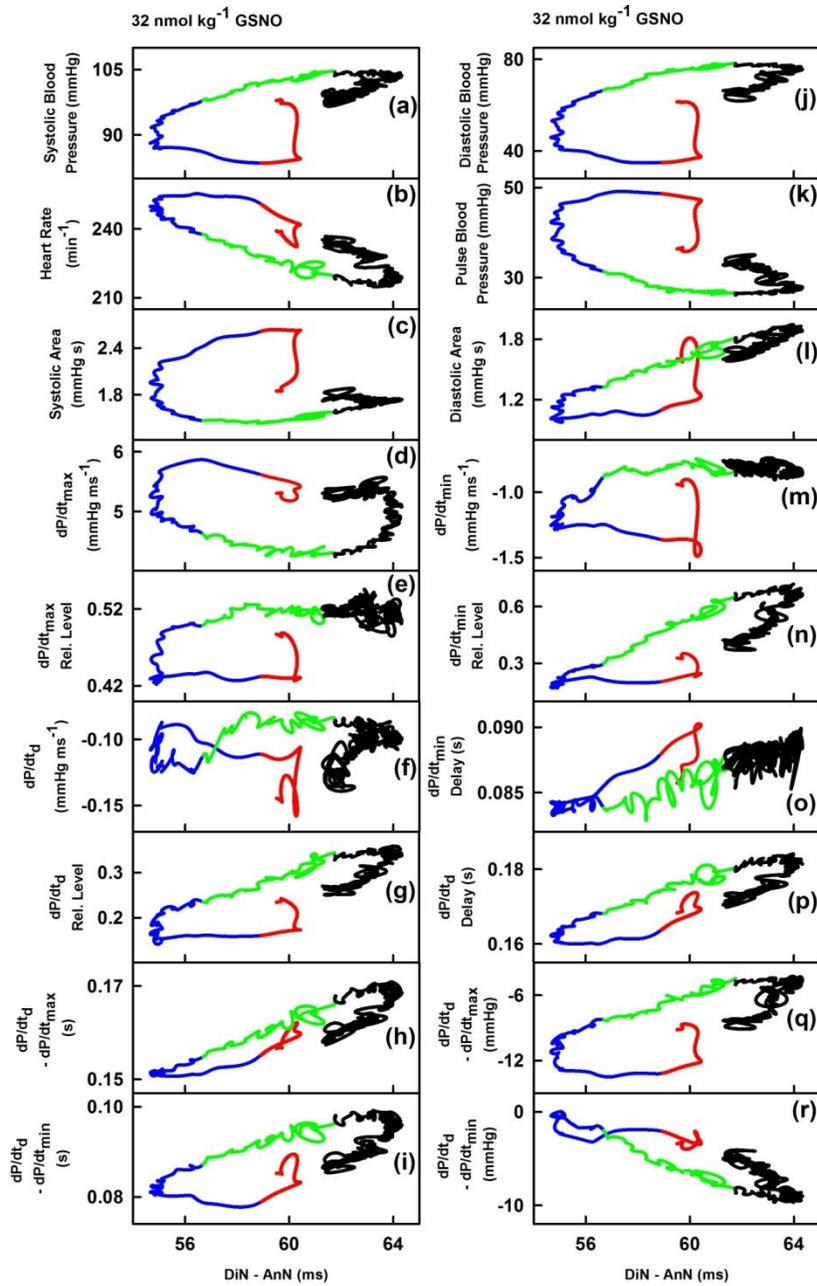


Figure S3E. Relationships of HPs to the time interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg⁻¹ GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in ms) loop > 3 ms of DiN-AnN.



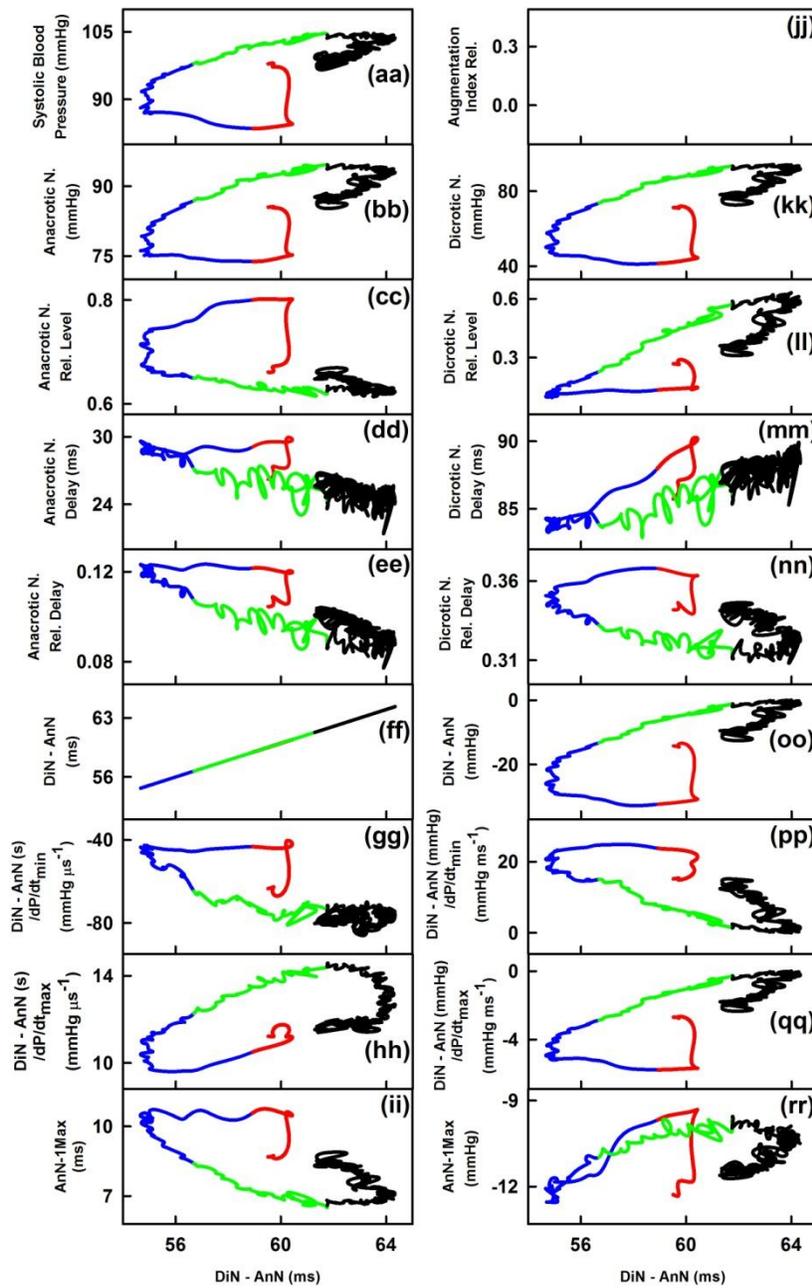


Figure S3F. Relationships of HPs to the time interval between dicrotic (DiN) and anacrotic (AnN) notches after the administration of 32 nmol kg⁻¹ GSNO. The colors and time dependent data correspond to Figure 2. The hysteresis was arbitrary defined as HPs-(DiN-AnN in ms) loop > 3 ms of DiN-AnN.