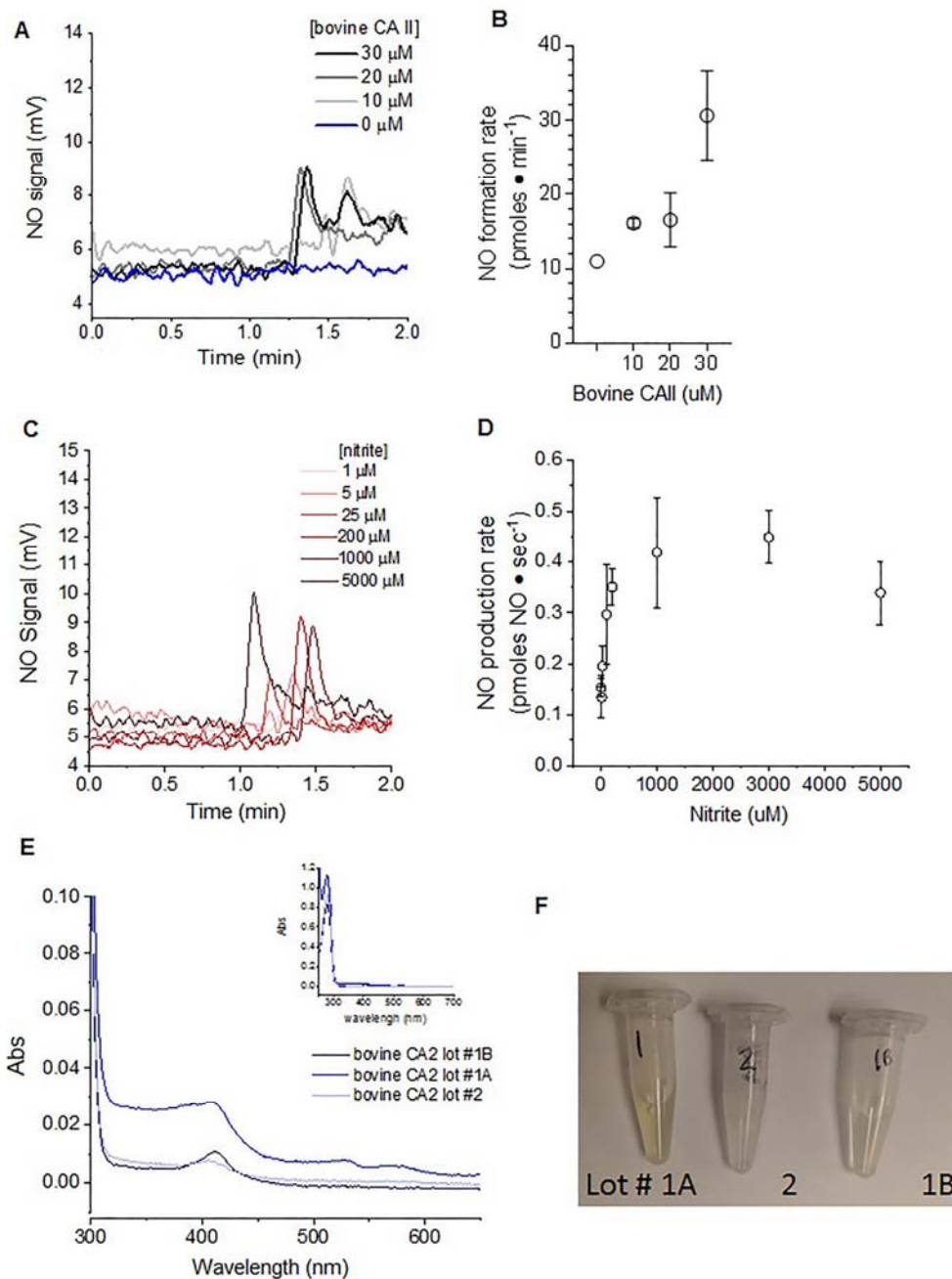


**Supplemental figure S1.** Enzyme characterization and reactivity with nitrite using the as-supplied bovine CAII. (A). The effect of bovine CAII concentration on NO-production rates with 1 mM nitrite at pH 7.2 10mM sodium phosphate buffer. (B). Summary of the data presented in panel A. Data was shown as mean  $\pm$  SD. (C). Represented raw data illustrating the effect of nitrite on NO chemiluminescence after the injection of 10uM bovine CAII into various concentrations of sodium nitrite. (D). Calculated NO-production rates measured from the reaction of bovine CAII and nitrite. Data was shown as mean  $\pm$  SD. (E). UV-VIS spectra of as-supplied bovine CAII (lot #1A and #2) and purified bovine CAII (lot #1B). Two unique lots (labeled lot #1 and lot #2) of commercially available CAII isolated from bovine erythrocytes) were investigated. (F). Photo of the bovine CAII enzyme samples.



**Supplemental figure S2.** Plasma and urinary nitrite levels in CAII<sup>-/-</sup>, CAII<sup>+/-</sup> and wide type mice. Blood and urine samples were collected from animals. Plasma and urine nitrite levels were measured using NO photolysis-chemiluminescence. (A) Plasma nitrite concentrations in CAII<sup>-/-</sup>, CAII<sup>+/-</sup> and wide type mice (n = 5). (B) Urinary nitrite levels (normalized to urine creatinine) in CAII<sup>-/-</sup>, CAII<sup>+/-</sup> and wide type mice (n = 7). Values are shown as means ± SEM.

