

Renal Response to an Induced Metabolic Alkalosis

We induce a metabolic alkalosis by infusing Na bicarbonate at 10 times its normal blood concentration and monitor the renal (& respiratory) compensatory responses.

Basic Procedure

Always turn off your popup blocker before working in *web*-HUMAN!

Setting up the experiment – Part 1

- 1) Set the variables to be monitored in **View Output:** as shown (below, top row)
- 2) Collect a Urine Specimen- In the **View** section set Patient Charts .. to Urine Specimen.
- 3) Begin to set up the bicarbonate infusion – In **Experiment Controls** section
 - Set the infusion time (IFMIN) to 60
 - Set the bicarbonate of the infusate to 240 (10 times normal blood HCO₃⁻)
 - We will turn the infusion on later. [Try How do I?-> Infuse Electrolyes for more on infusing].

The screenshot shows the 'View Output' section with dropdown menus for PH, PCO2A, BICARB, AVENT, UPH, and EXNA, all set to 'text'. Below this is the 'Experiment Controls' section with a table for variable settings:

Change Variable	Enter New Value	Info on Variable
IFMIN	60	Minutes
IFBIC	240	mMol/L

Below the table is the 'Run Experiment:' section with input fields for '0' minutes at '0' minute intervals, and 'Go' and 'Start Over' buttons. To the right is the 'Help' section with a 'Help info on:' dropdown set to 'Choose' and a 'Tips:' dropdown set to 'How Do I?'. Below that is the 'View' section with a 'Variable Value:' dropdown set to 'Choose', a 'Patient Charts or Lab tests:' dropdown set to 'Urine Specimen', and a 'Graph Style' dropdown set to 'Normalized, one graph' with a 'Size:' dropdown set to '600'.

- 4) We will continue setting up the experiment on the next screen. To reach it, we run the experiment for zero time! Under Run Experiment:, we enter values as follows:
 - we run for 0 minutes
 - at 0 minute intervals between data read outs and then
 - Press the <Go> button to run.

Your **Output from Web-HUMAN** appears. Note that your Tables now have in them the variables you selected (e.g. pH), that the model now has your 2 new infusion settings (e.g. infusion time span is now set from 10 to 60 min.) and that a baseline set of URINE SPECIMEN values have been returned.

Also note that you have a new experimental navigator ready for your final settings before executing the experiment. We will now enter those final settings.

Setting up the experiment – Part 2

- 1) Select the variables we wish to be *graphed* in the **View Output:** section (below, top row).
 - under each variable of interest (e.g. PH) select the as: graph option.
- 2) Collect another Urine Specimen for comparison with the first- In the **View** section set Patient Charts .. to Urine Specimen .

The screenshot shows a software interface for an experiment. It is divided into several sections:

- View Output:** Contains six dropdown menus for variables: PH, PCO2A, BICARB, AVENT, UPH, and EXNA. Below each variable is a dropdown menu set to 'graph'.
- Experiment Controls:** Contains a table for variable control and a 'Run Experiment' section.

Change Variable	Enter New Value	Info on Variable
IFVOL	1000	ml
Choose		

Run Experiment:
for 50 minutes at 10 minute intervals.

Buttons: Go, Start Over
- Help:** Contains a 'Help info on:' dropdown set to 'Choose', a 'Tips:' dropdown set to 'How Do I?', and a 'View' section with a 'Variable Value:' dropdown set to 'Choose'.
- View:** Contains a 'Patient Charts or Lab tests:' dropdown set to 'Urine Specimen', a 'Graph Style' dropdown set to 'Normalized, one graph', and a 'Size:' dropdown set to '600'.

- 3) Complete the set up of the bicarbonate infusion – In **Experiment Controls** section
 - Set the infusion volume (IFVOL) to 1000 .
- 4) We are ready to infuse and run our experiment. To do so, Under Run Experiment:, we enter values as follows:
 - we run for 50 minutes
 - at 10 minute intervals between data read outs and then
 - Press the <Go> button to run.

Voila! You see a graphic and a tabular output of your results.

- 5) We will discuss the graphic and tabular results. Re: table numbers note Scientific notation in FORTRAN and HUMAN

scientific	-1.0*10-1 =	0.1
in HUMAN	-1.0*E-01 =	0.1