THE pH KING: Track 2

This song touches on pH balance within the body, including the maintenance of pH by buffers and the causes and cures for some imbalances. References to acidosis are in red (blue litmus paper will turn red in an acidic solution, pH < 7.0). References to alkalosis are in blue (red litmus paper will turn blue in a basic solution, pH > 7.0).

You got your Yang, you got your Yin
You got your queen, you got your king
You got your acid, you got your base
Hey – balance is required, balance is required

Buffers are my jesters
Said the pH king
Reversible reactions
Balance pesky H^+ and OH^- things*

pH measures levels of acid and basic
ions and molecules
Like royalty swapping partners
Buffers are peace-inducing tools

CHORUS:
ECF pH 7.35 - .45
Necessary to life
Acidosis – pH low
Alkalosis – pH high
Metabolic chemically created
Respiratory breathing related
Balance is required, balance is required

My kingdom for a proton (H^+)
Moaned the pH king
I'm in metabolic alkalosis
From all this vomiting

When there is a pH change
Royal kidneys can compensate
Affecting ECF pH by changing
Absorption and excretion rates

Respiratory alkalosis not so bad
Hypocapnia from hyperventilation
Chemoreceptors will calm breathing
His Highness won't desert the nation

CHORUS

Can someone raise the king's pH
Respiratory acidosis has drawn its sword
Efficient breathing makes CO_2 go
Inadequate breathing CO_2 will hoard

Elevated CO_2 plasma pressure
Drives the system to more carbonic acid
The king has the most common imbalance
With a cigarette between his lips

Acidosis can lead to hyperkalemia
When the majestic heart might skip a beat
Inquire as to diuretic use
Infuse buffers or a hypotonic treat

CHORUS

Carbonic acid and bicarbonate
Buffer the King's ECF
System highly affected by breathing
The king better lay off of cigarettes

The phosphate buffer system
Helps control pH of the ICF
Allowing cellular activity
To progress and to prevent death

Both electrolytes and fluid
Balanced by even a peasant's hormones
Move the salt and water will follow -
ANP, BNP, ADH, aldosterone

* When discussing acids and bases,
H^+ = hydrogen = proton = acid
OH^- = hydroxide = alkaline = base
(HCO_3^- is an important contributor to alkalinity in the body.)

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