

Comenius University in Bratislava, Faculty of Medicine
Institute of Medical Chemistry, Biochemistry and Clinical Biochemistry

LABORATORY PROTOCOL SS04
Determination of gastric acid secretion

| | |
|--------------|-------|
| Name, group: | Date: |
|--------------|-------|

Principle:

Using nasogastric tube we will collect gastric fluid from the stomach of a fasting patient. During a one-hour period we will collect fluid every 15 minutes (basal secretion). Then we will administer pentagastrine i.m. in a dose of 6 µg/kg of body weight. During a one-hour period we will again collect fluid every 15 minutes (stimulated secretion). In the end we have 8 volumes of gastric fluid. We will measure how many ml each volume has and determine concentration of HCl by titration, calculate amount of HCl in each volume and finally determine basal acid output (BAO) and maximal acid output (MAO).

Procedure:

Titration: Using special pipets we will pipet **5 ml** of each portion into a clean titration flask and add two drops of phenolphthalein solution. Then we will titrate the sample using **0,1 mol/l NaOH** until the solution is of pink-red color permanently.

Calculation:

| Patient 1 | used NaOH (ml) | c (HCl) (mmol/l) | portion volume | mmol HCl/15 minutes |
|---|----------------|------------------|----------------|---------------------|
| 1 | | | 18 ml | |
| 2 | | | 12 ml | |
| 3 | | | 10 ml | |
| 4 | | | 12 ml | |
| non-stimulated secretion = basal acid output = BAO = | | | | mmol/hour |
| 5 | | | 55 ml | |
| 6 | | | 40 ml | |
| 7 | | | 48 ml | |
| 8 | | | 46 ml | |
| stimulated secretion = maximal acid output = MAO = | | | | mmol/hour |

| Patient 2 | used NaOH (ml) | c (HCl) (mmol/l) | portion volume | mmol HCl/15 minutes |
|---|----------------|------------------|----------------|---------------------|
| 1 | | | 5 ml | |
| 2 | | | 8 ml | |
| 3 | | | 7 ml | |
| 4 | | | 8 ml | |
| non-stimulated secretion = basal acid output = BAO = | | | | mmol/hour |
| 5 | | | 35 ml | |
| 6 | | | 38 ml | |
| 7 | | | 32 ml | |
| 8 | | | 41 ml | |
| stimulated secretion = maximal acid output = MAO = | | | | mmol/hour |

Reference values: BAO: 1 – 5 mmol/hour, MAO: 10 – 23 mmol/hour

Conclusion:

Next week:

- new topic – iron – role in metabolism, regulation of iron content in the body