

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

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LABORATORY PROTOCOL SS – 4<sup>th</sup> seminar  
**Determination of gastric acid secretion**

Name, study group:	Date:
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Principle:

Gastric fluid from the stomach of a fasting patient was collected by nasogastric tube. During a one-hour period, fluid was collected for every 15 minutes (**basal secretion**). Then, pentagastrine was administrated i.m. in a dose of 6 µg/kg of body weight. During a one-hour period, fluid was again collected for every 15 minutes (**stimulated secretion**). At the end, eight volumes of gastric fluid were taken. Volume of each portion was measured in mL. The concentration of HCl is determined by the titration method and the amount of HCl is calculated for each volume taken. Finally, **basal acid output (BAO)** and **maximal acid output (MAO)** are calculated.

Procedure:

Titration: Using glass pipettes, transfer **5 mL** of each portion into a clean titration flask and add two drops of phenolphthalein solution. Then titrate the sample using **0.1 mol/L NaOH** until color of solution is permanently pink-red.

Calculation:

Patient 1	used NaOH (mL)	c (HCl) (mmol/L)	portion volume	mmol HCl/15 min
1			18 mL	
2			12 mL	
3			10 mL	
4			12 mL	
<b>non-stimulated secretion = basal acid output (BAO)</b>				<b>mmol/h</b>
5			55 mL	
6			40 mL	
7			48 mL	
8			46 mL	
<b>stimulated secretion = maximal acid output (MAO)</b>				<b>mmol/h</b>

Patient 2	used NaOH (mL)	c (HCl) (mmol/L)	portion volume	mmol HCl/15 min
1			5 mL	
2			8 mL	
3			7 mL	
4			8 mL	
<b>non-stimulated secretion = basal acid output (BAO)</b>				<b>mmol/h</b>
5			35 mL	
6			38 mL	
7			32 mL	
8			41 mL	
<b>stimulated secretion = maximal acid output (MAO)</b>				<b>mmol/h</b>

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

Conclusion:

**Next week:**

Iron – role in metabolism, regulation of iron content in the body

(Study material: uploaded to MS Teams: **MF\_Medical Biochemistry-GM\_2023-2024**)