

Acid base and blood gas analyser

Vocabulary warm-up

1 Match the words in English with their translations:

- | | |
|-----------------------|---|
| 1 unknown | a) ponořit |
| 2 inner side | b) tenká vrstva |
| 3 coated | c) dosáhnout |
| 4 immerse | d) neznámý |
| 5 plastic jacket | e) nylonová síťka |
| 6 basically | f) vnitřní strana |
| 7 nylon net | g) plastický obal |
| 8 uncharged molecules | h) tím |
| 9 pass through | i) v zásadě |
| 10 thin layer | j) projít skrz |
| 11 reach | k) nenabité molekuly, molekuly bez náboje |
| 12 thereby | l) potažený |

Reading

1 Practice pronouncing the following terms:

chloride – silver chloride – bicarbonate – carbon dioxide – acid – acidic – solution – equilibrium – diffuse – electrolyte – electrolysis – micrometer – electrode – oxygen – nitrogen – hydrogen – ion – proton

2 Read the text and complete the gaps with the words from the box:

electrode	uncharged	partial	analysers	diffuse	electrolyte	solution
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Most acid base and blood gas _____ (1) measure pH, pCO₂, pO₂ **by means of** selective electrodes.

pH electrode

A pH electrode is a glass _____ (2) with a pH-sensitive glass membrane to **seal** its tip. On the inner side of the membrane is a buffer solution with constant pH. A silver wire coated with AgCl is immersed in this solution and, via a **plug**, connected to the measuring instrument. On the other side of the glass membrane is a _____ (3) of unknown pH (the sample).

pCO₂ electrode

pCO₂ is defined as the _____ (4) pressure of CO₂ in a gas phase in **equilibrium** with the blood, and is measured by a pCO₂ electrode.

A pCO₂ electrode is a combined glass and silver/silver chloride (Ag/AgCl) reference electrode placed in a plastic jacket, which is filled with a bicarbonate _____ (5). The jacket is covered with a 20 μm silicon membrane placed on a 50 μm nylon net.

The pCO₂ electrode is basically a pH electrode with a silicon membrane added. This membrane allows only _____ (6) molecules (i.e. CO₂, O₂, N₂) to pass through it. Charged ions, such as H⁺, will not pass. Consequently, dissolved CO₂ from the sample will _____ (7) into the thin layer of bicarbonate electrolyte until equilibrium is reached.

2 Now answer these questions:

- 1 What are the electrodes made of?
- 2 Where on the electrode is the glass membrane?
- 3 Does the pH in the buffer solution change?
- 4 What is the role of the silver wire?
- 5 Where is the bicarbonate electrolyte situated?
- 6 What is the difference between a pCO₂ electrode and a pH electrode?
- 7 What kind of molecules pass through the silicon membrane?
- 8 How long do the CO₂ molecules move into the bicarbonate electrolyte?

Listening

A Pre-listening warm-up. Put the words in the correct order.

- 1 blood do a gas
- 2 sure gloves you have your make on
- 3 in password put your
- 4 machine put syringe into the the
- 5 hit "analyse" button the
- 6 the for patient ask ID
- 7 scanner use a
- 8 it manually put in
- 9 syringe the remove
- 10 the sharps syringe in container a discard

B Watch and answer these questions:

- 1 What is the first thing you should do before running the test?
- 2 Does the machine require a password?
- 3 Which type of blood is being tested?
- 4 How can you read the patients ID?
- 5 How long does the testing take?
- 6 How do you know the test is over?
- 7 How do you get your results?
- 8 What do you have to do with the syringe?
- 9 What is the last thing you do?

Grammar point

A Adjectives and Adverbs – Comparison

Complete the sentences using comparative or superlative forms:

1. This coffee is very weak. I like it a bit
2. The hotel was surprisingly big. I expected it to be
3. The hotel was surprisingly cheap. I expected it to be
4. Don't worry. The situation isn't so bad. It could be
5. This is the film I have ever seen.
6. You were a bit depressed yesterday, but you look today. (good)
7. My mother is than my father. (old)
8. Our shop has theprices. (low)
9. Frying is the way of cooking. (healthy)
10. Spring is of the four seasons. (beautiful)

B Modified comparison

Use the words in brackets to complete the sentences. Use **much / a bit** etc. + a comparative form. Use **than** where necessary.

- 1 Her illness was much more serious than we thought at first. (much / serious)
- 2 This bag is too small. I need something (much / big)
- 3 I liked the museum. It was I expected. (much / interesting)
- 4 It was very hot yesterday. Today it's (a bit / cool)
- 5 I'm afraid the problem is it seems. (far / complicated)
- 6 You're driving too fast. Can you drive ? (a bit / slowly)
- 7 It's to learn a language in a country where it is spoken. (a lot / easy)
- 8 I thought she was younger than me, but in fact she's (slightly / old)