

Edexcel (B) Biology A-level

4.5 - Transport of gases in the blood

Flashcards

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Describe the structure of haemoglobin.



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Globular, water soluble. Consists of four polypeptide chains, each carrying a haem group (quaternary structure).



Describe the role of haemoglobin.



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Present in red blood cells. Oxygen molecules bind to the haem groups and are carried around the body to where they are needed in respiring tissues.



How does partial pressure of oxygen affect oxygen-haemoglobin binding?



How does partial pressure of oxygen affect oxygen-haemoglobin binding?

As partial pressure of oxygen increases, the affinity of haemoglobin for oxygen also increases, so oxygen binds tightly to haemoglobin. When partial pressure is low, oxygen is released from haemoglobin.



Explain the Bohr effect.



Explain the Bohr effect.

As partial pressure of carbon dioxide increases, the conditions become acidic causing haemoglobin to change shape. The affinity of haemoglobin for oxygen therefore decreases, so oxygen is released from haemoglobin.



What do oxyhaemoglobin dissociation curves show?



What do oxyhaemoglobin dissociation curves show?

Saturation of haemoglobin with oxygen (in %), plotted against partial pressure of oxygen (in kPa). Curves further to the left show the haemoglobin has a higher affinity for oxygen.



How does the Bohr effect alter the position of an oxyhaemoglobin dissociation curve?



How does the Bohr effect alter the position of an oxyhaemoglobin dissociation curve?

Curve shifts to the right because haemoglobin's affinity for oxygen has decreased.



How does myoglobin differ from haemoglobin?



How does myoglobin differ from haemoglobin?

- Only has one haem group.
- Has a very high affinity for oxygen even at low partial pressures.
- Is found in muscle cells of mammals with high metabolic demands.



How does foetal haemoglobin differ from adult haemoglobin?



How does foetal haemoglobin differ from adult haemoglobin?

The partial pressure of oxygen is low by the time it reaches the foetus, therefore foetal haemoglobin has a higher affinity for oxygen than adult. Allows both mother's and child's oxygen needs to be met.

