CHAPTER 3: MOVEMENT OF SUBSTANCES ACROSS THE PLASMA MEMBRANE

Hypotonic, Hypertonic and Isotonic Solutions

1. Which of the following statements about an animal cell immersed in a hypotonic solution are true?

I The cell becomes flaccid.
II The cell enlarges and finally ruptures.
III There is no net movement of water at the end.
IV There is an initial net flow of water into the cell.

A I and III
B II and III
C II and IV
D III and IV

2. Which of the following statements about both animal and plant cells immersed in a hypertonic solution are true?

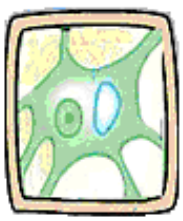
I Crenation occurs.
II Plasmolysis occurs.
III The protoplasts shrink.
IV There is a net flow of water out of the cells.

A I and III
B II and III
C II and IV
D III and IV

3. Which of the following plant cells has been immersed in a hypotonic solution?

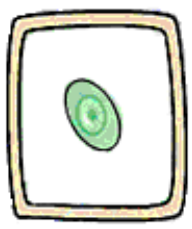
A

B



C

D



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4. What will happen when a red blood cell is placed in an isotonic salt solution?

A There will be no change.
B The cell will shrivel.
C The cell will swell and burst.
D The cell will shrivel and then return to normal.

5. The following information concerns two animal cells.

> Two similar animal cells, X and Y, were placed in a 0.5% sucrose solution. Cell X swelled for a little while and then stopped swelling; cell Y continued to swell for some time and finally ruptured.

Which of the following statements about the cells at the beginning of the experiment is true?

A Cell X was hypertonic to cell Y.
B Cell Y was hypertonic to cell X.
C Cell X was hypertonic to the solution whereas cell Y was hypotonic.
D Cell X was hypotonic to the solution whereas cell Y was hypertonic.

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