

Allergy

Student Worksheet

8

The following answers are based on pages 56 – 64:

1. The immune system sometimes attacks substances which are not harmful to your body, causing the release of powerful chemicals. Name the three cell types involved in allergic responses (page 58):

- (i) Mast cells release potent chemicals such as histamine.**
- (ii) Basophils attack bacteria and viruses; they also release cell-destroying chemicals.**
- (iii) Eosinophils destroy larvae of parasitic worms that invade cells.**

2. One of the chemicals released by the mast cells is histamine, which attaches itself to special receptors on muscle and nerve cells. Explain how anti-histamine drugs work (page 60).

Anti-histamines are similar in shape to histamine and, therefore, bind tightly to histamine receptors, preventing histamine itself working.

3. Are there any disadvantages to taking anti-histamine drugs (page 60)?

Anti-histamines can make people sleepy. This is because they also block some receptors on nerve cells in the brain.

4. What happens to a person who is suffering from asthma (pages 62 – 63)?

Histamine causes spasms in the muscles of the tiny airways in the lungs which make the sufferer gasp, wheeze and cough. Other chemicals released by the mast cells cause defender cells to flood into the lungs, causing inflammation. Eosinophils also destroy some of the lining cells of the lung. Asthma sufferers become sensitive to all kinds of changes to the air they breathe.

5. Name (i) one country where asthma is common and (ii) one country where it is rare (page 62):

- (i) UK, USA.**
- (ii) India, Japan, rural Gambia.**

6. Give two reasons why the number of cases of asthma varies in different parts of the world (page 62):

- (i) Many allergens, e.g. house dust mite, household chemicals and sprays, are more common in the Western world.**
 - (ii) Modern-day pollution may also be an important factor in the increase in allergic disorders in the Western world.**
- Others: climate, altitude and race also affect the incidence of allergic disease.**

7. Give two substances which can trigger an asthma attack (page 62):

(i) Pollen and spore from fungi.

(ii) Faeces of house dust mite.

Others: feathers, animal fur, some foods (e.g peanuts).

8. Name two factors which make an attack worse (page 62):

(i) Cigarette smoke.

(ii) Pollution.

Others: cold air, exercise, lung infections.

9. Name a drug that relieves asthma symptoms and describe how this drug can be taken (page 63):

Salbutamol works by relaxing the muscles in the lungs by mimicking the natural hormone adrenaline. The drug is breathed in using an inhaler or a nebulizer, which delivers it straight to the lungs.