



TUTOR TALK: The important fact to consider with the definition, is the term “unusually high”.

It would be easy to say that all of us are allergic to cyanide. Cyanide is poisonous to all humans and this is where one differentiates between allergy and poison. With an allergy, one particular individual exhibits a negative reaction whilst the majority of individuals do not. An example would be a peanut allergy. To most people, peanuts do not cause any hazard. To one individual in particular, however, a minute amount of peanut can be fatal.

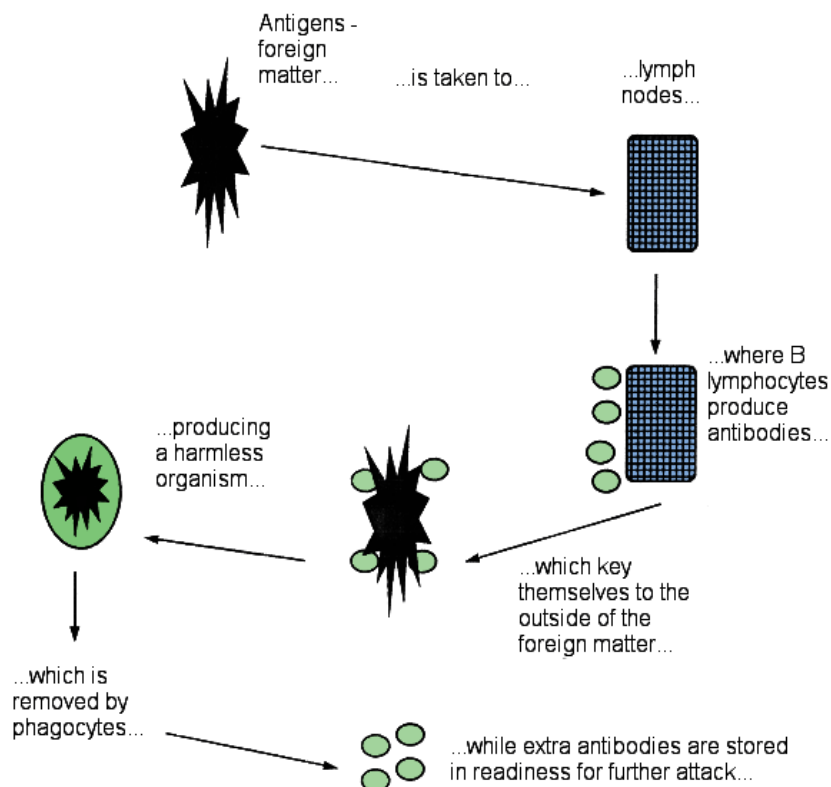


TUTOR TALK: An allergy can therefore be defined as an **abnormal response to a normal substance**.

WHY DOES THE BODY EXHIBIT A NEGATIVE REACTION?

To summarise into a single sentence, we all have the capability to fight off any negative foreign bodies (antigens), yet with certain substances our ability to fight is insufficient.

To expand on this, we must examine the immune system in detail:



To fully understand the allergic response, we must examine these antibodies.



There are, in fact, 5 different types, with one in particular (known as **IgG – immunoglobulin G**) being the major variety. It circulates through all blood and tissue within the body. **IgA**, although a minority antibody, is situated within intestinal secretions and affects food tolerance.

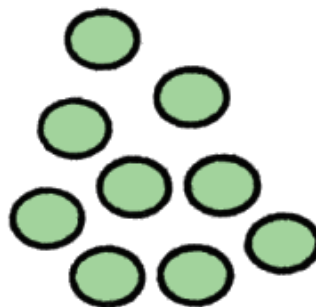
A further antibody, **IgE**, even though the least prolific of the five, appears to cause the major allergic reactions. It has been found that children who suffer from:

- asthma
- hay fever
- eczema

have up to 6 times the expected quantity of **IgE** in their mucus membranes and skin. As a result, the following process occurs:



Pollen/fur/dust particles...



...cause 6 times the normal amount of antibodies to be produced...



...which in turn produces excess “leakage” of mucus from the mucus membranes.

Because of the nature of the allergic reaction, there is no cure to date. Fortunately, the vast majority are not life-threatening – rather they are uncomfortable and unpleasant. Medical treatment can normally provide at least partial relief.

Generally, an allergy will affect the parts of the body to which they are exposed, so that an airborne allergen such as pollen will affect eyes, nose and air passages. A food allergy will affect the gut.



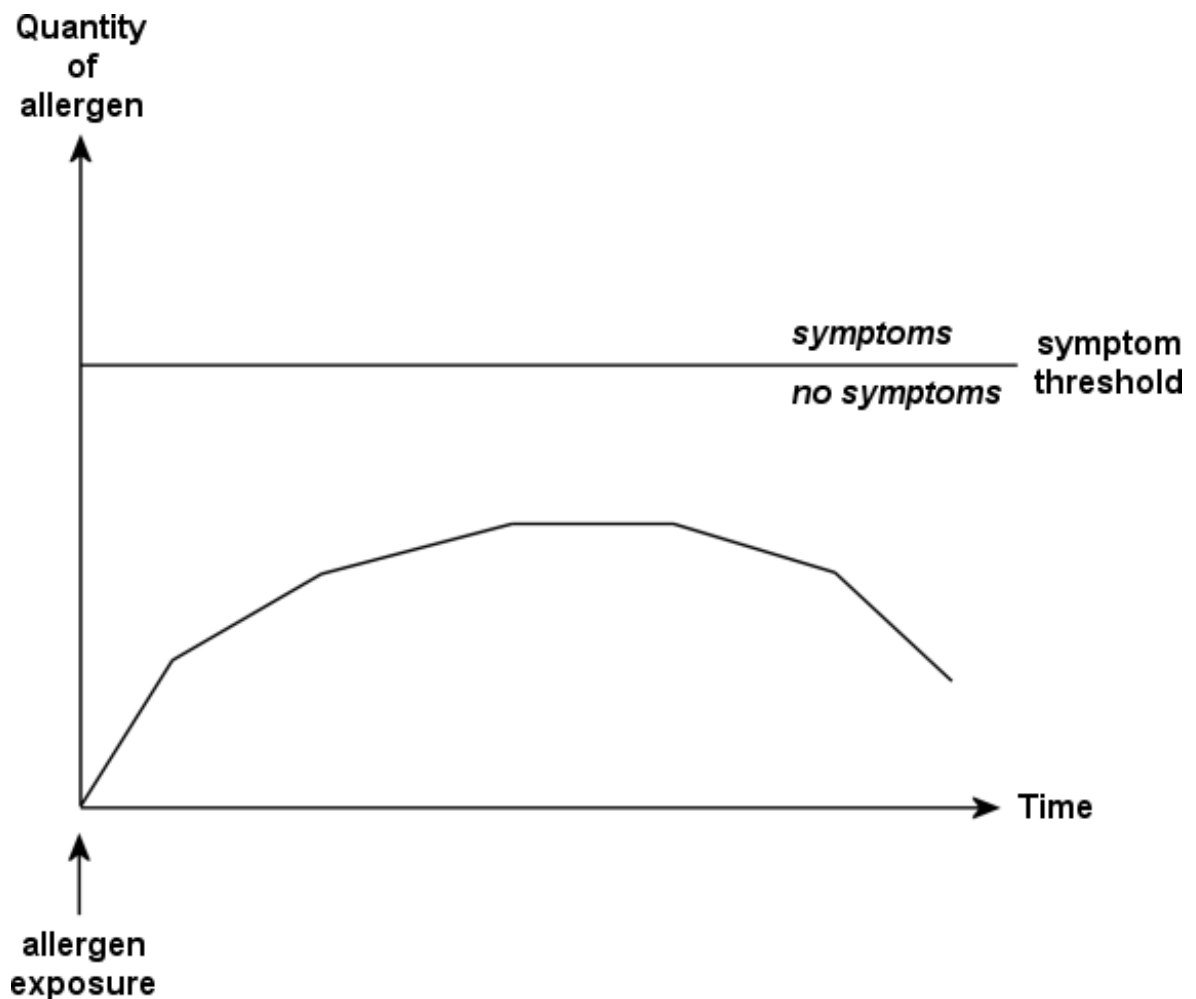
TUTOR TALK: However, the student will find in later assignments that food allergens can penetrate the entire body.

THRESHOLDS OF ALLERGY

Stage 1

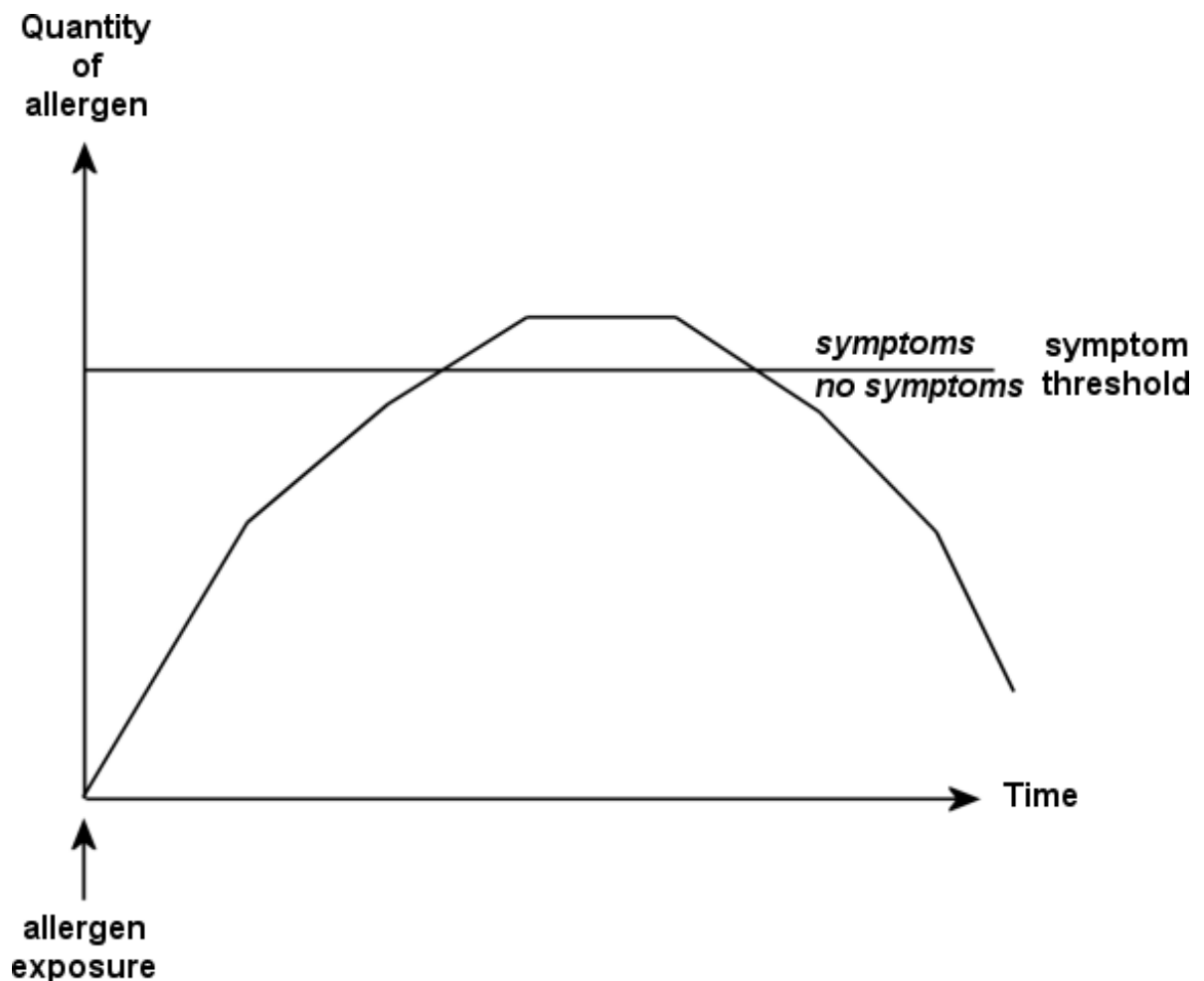
For an allergy to exist in the first place, the body has to have come into contact with the allergen and become sensitised to it.

It takes a certain level of allergen to produce an allergic reaction, and below this level the body will not exhibit a reaction. This is not to say that the allergen is not having a negative effect, rather that the person can *tolerate* that level. The level varies from substance to substance and can be a minute amount through to a comparatively large dose. Indeed, two minor allergens can, individually, remain below the threshold and yet together can produce quite severe reactions.



In the above example, the threshold has not been reached and no outward signs of allergy are shown. The body has been able to tolerate the allergen.

Stage 2



Stage 2 shows a higher level of allergy, where the threshold has been crossed, the body is unable to cope with the level, and symptoms occur.

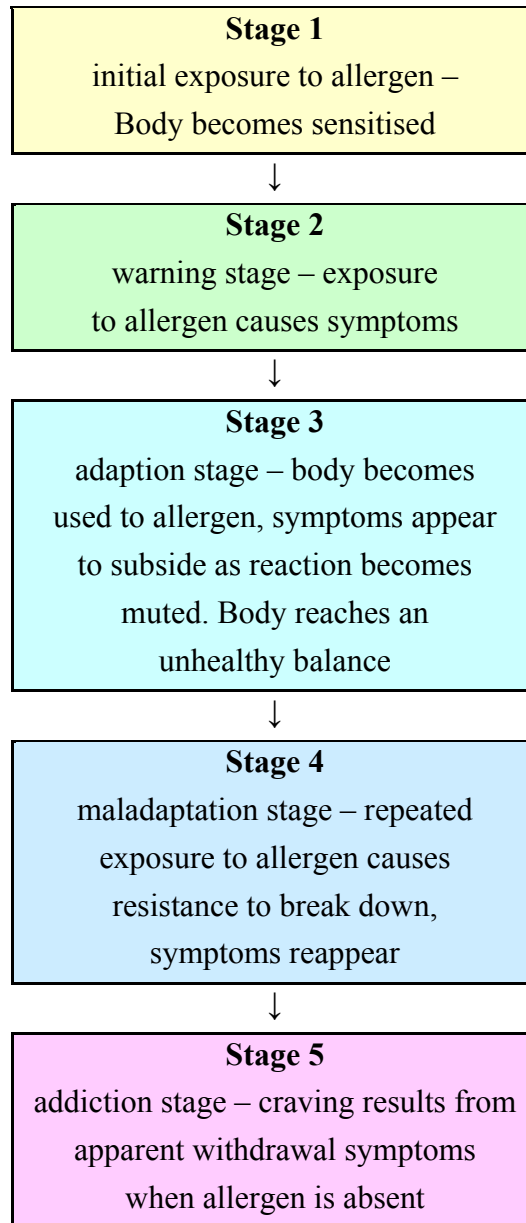


TUTOR TALK: The student will examine a wide range of allergic symptoms in later assignments, but we can look briefly at a common example, hayfever.

During very low pollen count periods, the sufferer may not appear to have an allergic reaction, ie the threshold has not been reached. The body is nevertheless sensitised to pollen. This is an example of stage 1. As the pollen count rises, exposure to the allergen increases and the body cannot deal with the offending pollen.

As it tries harder and harder, more and more antibodies are produced, and in the case of pollen, 6 times the amount of **IgE** results, with the ensuing excess leakage of mucus. It is the mucus leakage which is the symptom.

THE FIVE STAGES OF ALLERGIC REACTION



TUTOR TALK: Addiction is particularly applicable to food allergies, with the following being an excellent example of the process.