

WORKING OF IMMUNE SYSTEM DURING TETANUS

Our soil is full of germs and bacteria which are our body's enemies. These enemies always remain in search of that any way they could enter our bodies. They want to enter our body because they also want to live like us but on soil, they are present in form of spores. These spores are we could say eggs that need to grow like us, but it could only happen in our bodies. That is why these enemies need us. So, one day there was a girl named Luca was hit by an accident. She has been hurt in her arms, legs and knees. At this point, how bacterial enemies could miss this chance to enter her body. Thus, all enemies started to fight and race that who enters first from torn body parts of Luca. One bacterial enemy named *Clostridium tetani* win this race and got a chance to enter Luca's body. Now, it's time to start a battle between the bacterial enemy and Luca's body because how our body could remain quiet when someone wants to harm us. We have our army named immune system like our country's army which works to defend us against enemies. But our body army was at rest when bacterial enemies entered our bodies. We have to do something to wake up and activate our body army. There is one way through which we could help our body army and that is injection. It sounds alarming but we have to do it for helping our bodies. There is an interesting thing about this injection and that is it contains dead bacterial enemies in it which are called an antigen. When we give our body the dose of such dead enemies then our body army would wake up and send its soldiers with antibody weapons for fighting against real antigen enemies. We have different types of soldiers in our body army and these all are very special because everyone uses a different type of weapons to fight against enemies. Let me tell you a description of our body army soldiers.

Soldier 1: Macrophages

- Our body army has one soldier named macrophages which work by eating every foreign enemy. These soldiers are our first-line defence in any battle because these are our usual soldiers and work in every battle, that is why named as the non-specific immune response of our body army. After eating the enemy, they release a weapon, chemical acid and kill the enemy with that chemical acid. This whole fighting method of macrophages soldiers is called phagocytosis.

Soldier 2: Cytotoxic Cells

- The second type of our body is army soldiers named Cytotoxic T cells. These soldiers can kill the enemy within 5 minutes and their fight method called apoptosis.

Soldier 3: Helper T Cells

- The third type of our body is army soldiers named helper T cells. These soldiers are very special because their name is telling as helper cells body soldiers. These soldiers of our body army work in combination with other body soldiers. These soldiers first activate cytotoxic T cells, soldiers, at the battle site, then also activate B cell and macrophage soldiers to reach the battle point and kill the enemy jointly.

Soldier 4: B Cells

- The fourth soldier of our body army was named B cells. This type of soldier produces a protein called an antibody. B cell soldier releases its antibody weapon to the antigen of the enemy and binds with it and kills it.

Now let's move to the battle site, where we are going to fight antigen enemy and Luca's body army. Our body army selects different soldiers for battle according to an enemy power. In this war, our body army would use the third type of soldier in this battle which is named Helper T Cells soldiers. As we know that these types of our body soldiers work jointly, which is why they would be called first cytotoxic Cells soldiers and then also activate B cells and macrophages soldiers at the battle point. However, all these soldiers work under the instruction of Helper T cells soldiers. They would release their specific weapons named antibodies for killing bacterial enemies named antigens. The war would take place between both and in the end, Luca would win. Finally, we have killed our foreign enemy.

