ROBERT KOCH FATHER OF PRACTICAL BACTERIOLOGY

Chapter · March 2019

CITATIONS
0

READS
29

1 author:

Abhay Solunke
Shri Govindrao Munghate Arts and Science College, Kurkheda
31 PUBLICATIONS **11** CITATIONS

SEE PROFILE

ROBERT KOCH

FATHER OF PRACTICAL BACTERIOLOGY

Dr. Abhay B. Solunke

Head Department of Microbiology

Shri Govindrao Munghate Arts & Science College,
Kurkheda.441209

www.abhaysolunke.info

ROBERT KOCH: FATHER OF PRACTICAL BACTERIOLOGY

ROBERT KOCH (1843 to 1910)

He perfected many bacteriological techniques and known as "**Father of Practical Bacteriology**". He is also called as **Father of Modern Science of Tuberculosis**.

Robert Koch was born in Clausthal, Germany, on December 11th, 1843, and he died in Baden-Baden on May 28th, 1910. He obtained his medical degree from Gottingen after studies under F. G. J. Henleand F. Wohler. He was a medical officer in Wollstein from 1872 to 1876 and during these few years completed his work on growing the *anthrax bacillus* in pure culture (1876). Thereafter Koch became famous for his contributions to all phases of the new science of bacteriology. In 1882 he isolated the tuberculosis organism, and in 1883 the vibrio of cholera. He founded the great bacteriological school at Berlin, which attracted students from all over the world, and from 1891 to 1904 he was director of the Institute of Infectious Diseases in Berlin.

Koch traveled extensively during his lifetime in his efforts to find the cause and control of diseases. In 1896 he went to South Africa to study rinderpest, in 1897 to Bombay to study bubonic plague, and in 1906-07 to East Africa to study sleeping sickness.

He visited India in 1883 and identified the Vibrio cholera. Kolkata building where Koch conducted his laboratory work on cholera. During Bombay visit he stayed at JJ Hospital room.

Koch visited Bombay(Mumbai) was as a part of the German Plague Commission during 1897.

The first memorable work by Robert Koch was on anthrax.

'KOCH PHENOMENON', laid the foundation of of immunity in tuberculosis.

Koch received the Nobel prize in medicine in 1905 for his work on tuberculosis. The citation reads as follows: 'Seldom has an investigator been able with such perspicacity to envisage in advance an uncharted region of research, and seldom has one been so brilliant and successful in the development thereof, as has Robert Koch. Seldom, however, have so many discoveries, of incisive importance for the human race, emanated from the activity of a single individual, as has been the case with him."

Koch is the master of bacteriological technique. Epidemics of cholera were controlled by a system developed by Robert Koch. Koch cultured bacteria on gelatin in 1881.

In 1890 Koch announced to the world the discovery of tuberculin as a means of curing tuberculosis.

KOCH'S POSTULATES

1. The suspected pathogenic organism (here: the bacterium) must always be present in lesions of the diseased tissues of an organism in question and absent in healthy organisms (here: plants).

2. The suspected organism must be isolated from the diseased tissues and grown in pure culture.

3. When the pure culture of the organism is inoculated into a healthy host (here: plant) in the laboratory it must produce a similar disease in this host.

4. The same organism must be found and reisolated from the experimentally inoculated host (here: plant) in which disease developed.

Koch's "Direct Stimulation" Theory. The first theory offered to account for the increased yield obtained from soils treated with an antiseptic was the "direct stimulation" theory advanced by Koch in 1899. He considered carbon bisulphid to have a direct stimulating effect on the plants themselves. He later found ether to have a similar effect. In experiments dealing with the addition of ether to the soil Koch found that the increased yield was pronounced on the first crop, whereas the residual effect was slight, as with carbon bisulphid the beneficial effect increases with the amount of application.

He further found that soils sterilized with heat produced better crops when treated with carbon bisulphid than when not so treated and concludes that the effect of the antiseptic, therefore, cannot be due to its effect on bacteria.

The theory of Koch has been supported by Fred who fertilized soil with an abundant supply of sodium nitrate and found that in every case in which carbon bisulphid was added the growth and yield of crop were much superior to those in the corresponding pots not treated with that substance. He concludes that as there was no lack of plant-food and other conditions were favorable to plant growth, the effect of the antiseptic must have been directly upon the plant. There is ample evidence to prove that many of these antiseptics in dilute solutions stimulate the plants directly, yet there is no evidence which will substantiate the claim that this is the only or even the principal influence on the plant and soil.

References

1. A.B. Solunke, V.S. Hamde, P.R. Thorat, R.S. Awasthi. History of Microbiology & Microbiological Methods. Atharva Publihsers Jalgaon.
2. A.B. Solunke, V.S. Hamde, P.S. Wakte, R.S. Awasthi. Manual of Method for Pure Culture Study. NPI Publishers New Delhi.

3. A.B. Solunke, V.S. Hamde, S.C. Aithal, R.S. Awasthi. Compendium of Immunology & Virology. Notion Press Singapore.