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Review

A Recent Review On Tuberculosis Disease And Its Treatment

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Abstract

Tuberculosis is one of the major public health problems faced globally. Resistance of *Mycobacterium tuberculosis* to antitubercular agents has called for an urgent need to investigate newer drugs to combat tuberculosis. Tuberculosis continues to be a huge beril disease against the human population according to WHO, tuberculosis is a major killer of human population after HIV/AIDS, tuberculosis is highly prevalent among the low socioeconomic section of the population and marginalized section of the community. In India, national strategic plan (2017–2025) has a national goal of elimination of tuberculosis by 2025.It requires increased awareness and understanding of tuberculosis. In this review article history, taxonomy, epidemiology, histology, immunology, pathogenesis and clinical features of both pulmonary tuberculosis

(PTB) and extra - pulmonary tuberculosis (EPTB) and has been discussed. A great length of detail information regarding diagnostic modalities has been explained along with diagnostic algorithm for PTB and EPTB. Treatment regimen for sensitive, drug resistance and extensive drug resistance tuberculosis has been summarized along with newer drugs. Garlic is an edible plant which has generated a lot of curiosity throughout human history as a medicinal plant. Garlic contain sulphur compound like allicin, ajoene, allylmethyltrisulphide, diallyltrisulfide, diallyltrisulphide and other which exhibit various biological properties like antimicrobial, anticancer, antioxidant, immunomodulatory, anti- inflammatary, hypoglycimic and cardiovascular effects. According to various traditional system of medicine, Garlic is one of established remedies for tuberculosis. The objective of current study was to investigate *in vitro* antimycobacterial activity as well as antibacterial activity of various extract rich in specific phytoconstituentfrom Garlic.

Keywords: Tuberculosis, *Mycobacterium tuberculosis,* WHO

INTRODUCTION

Johann Schonlein coined the term “tuberculosis” in the 1834, though it is estimated that Mycobacterium tuberculosis may have around as 3 million years! Tuberculosis (TB) was called “phthisis” in ancient Greece, “ tabes ” in ancient Hebrew. In the “schachepheth” in ancient Hebrew. In the 1700, TB was called “the white plague” due to

the paleness of the patients. TB was commonly called "consumption" in the 1800s even after Schonlein named it tuberculosis. During this time, TB was also called the "Captain of all these men of death". During the middle ages, TB of the neck and lymph nodes was called "scrofula". Scrofula was believed to be a different disease from TB in the lungs. In 1882,On March 24,Dr.Robert Koch announced the discovery of Mycobacterium tuberculosis , the bacteria that causes tuberculosis, In short term it is determined as (TB). During this time, TB killed one out of every seven people living in the United State (US) and Europe. Dr .Koch's discovery was the most important step taken towards the control and elimination of this deadly disease. A century later, March 24 was designed World TB day. Until TB is eliminated, World TB day won't be a celebration. But it is a valuable opportunity to educate the public about the devastation caused by TB and how it can be stopped.

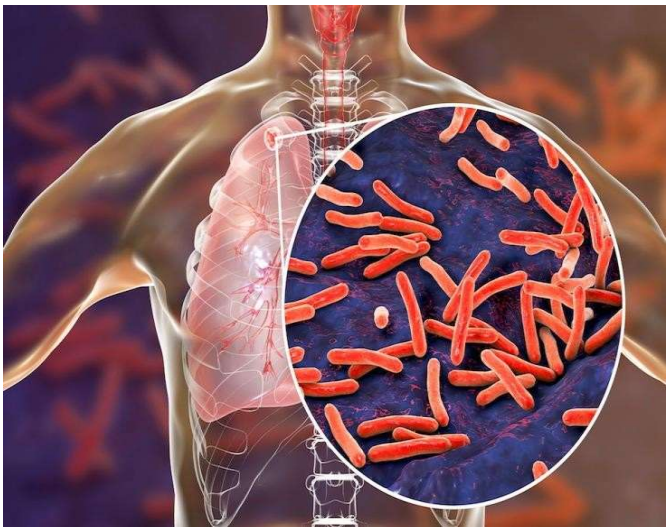


PERUVIAN MUMMY WAS DISCOVEREDTHAT

Studies on Egyptian mummies (2400 – 3400 B.C) revealed the presence of skeletal deformities related to tuberculosis, such as characteristics Pott's deformities. However, no evidence on tuberculosis was found in Egyptian papyri. The description of tuberculosis was initially found in India and China as early as 3300 and 2300 years ago, respectively. Moreover, tuberculosis was mentioned in the Biblical books using the Hebrew word *'schachepheth'* to describe tuberculosis. In the Andean states, the first pre – Columbian evidence of tuberculosis was observed in Peruvian mummies, indicating the presence of the disease before the European colonization in South America. Tuberculosis was well documented in the Ancient Greece as 'Phthisis' or 'Consumption'. In book 1, Of the Epidemics, Hippocrates described the symptoms of Phthisis, which are very much similar to the common characteristics of tubercular lung lesions. A Greek physician, Clarissimus Galen, who become the physician of the Roman Emperor Marcus Aurelius in 174 AD, described the symptoms of tuberculosis as fever, sweating, coughing and blood – stained sputum. He also suggested that an effective treatment of tuberculosis should include fresh air, milk, and soya beverage. In Roman times, tuberculosis was mentioned by Celso, Aretaeus of Cappadocia, and Caelius Aurelianus. However, it remained unrecognized at that time. After the decline of the Roman Empire in the 5th century, a vast pool of archeologic evidence of tuberculosis was found throughout Europe, indicating that the disease was widespread in Europe during this time. In the middle ages, a new clinical form of tuberculosis was described as scrofula, which is a disease of cervical lymph nodes. In England and France, the disease was known as ''K ing's evil'', and there was a popular believe that the disease can be treated with 'royal touch'.The practice of royal touch' established by English and French kings continued for several years. Queen Anne was the last British monarch to employ this method for healing.The first medical intervention foe treating tuberculosis was proposed by a French surgeon,Guy de Chauliac.He advised the removal of scrofulous gland as treatment option.In the 16th century, a clear description about th contagious nature of tuberculosis was first provided by an Italian physician,Girolamo Fracatoro.In 1679,Francis sylvius provided the exact pathological and anatomical description of tuberculosis in his book 'opera medica'.In 1720,a British physician, Benjamin marten,first described the infectious orgin of tuberculosis in his publication entitled 'A new theory of consumption'.In the 17th and 18th centuries, the terms 'Consumption' and 'phthisis' were used to described tuberculosis.In 1890, a French physician, theophile Laennec,identified the pathological signs of tuberculosis, including consolidation, pleurisy and pulmonary cavitation.He also identified that *M.Tuberculosis* can infect the gastro intestinal tract, bones, joints, nervous system, lymph nodes, genital and urinary tracts,and skin (extra – pulmonary tuberculosis), in addition to the respiratory tract (pulmonary tuberculosis).

In 1843, Philipp Friedrich Hermann Klencke, a german physician, experimentally produced the human and bovine forms of tuberculosis for the first time by inoculating extracts from a miliary tubercle into the liver and lungs. In 1854, Sanatorium cure for tuberculosis was introduced by Hermann Brehmer, a tuberculosis patient, in his doctoral thesis. He mentioned that a long – term stay in the Himalayan mountains helped cure his tuberculosis. A French military surgeon, Jean – Antonie Villemin, experimentally proved the infectious nature of tuberculosis in 1865. He inoculated a rabbit with fluid taken from a tuberculous cavity of a person who died of

tuberculosis. IN Ancient timed, the only way to diagnosis the disease was through physical examination.Early in the second century CE, Galen defined classic tuberculosis symptoms that we know today: hemoptysis (coughing up blood), night sweats and fever.Even then,however, it was recognised that diagnosis based on symptoms alone was insufficient. Tuberculosis was certainly not the only chronic disease of ancient people and shares symptoms with viral or bacterial pneumonias, cancer, asthma and allergies. Soranus of Ephesus attempted to improve on the diagnosis of tuberculosis and described a rudimentary method based on sputum, which was burned on hot coals.Presence of tuberculosis was inferred by a characteristics smell unsurprisingly described as 'foul' and suggestive of necrotic flesh.Although burning sputum may initially seem more akin to witchcraft than medicine,this method could be described as prescient in light of modern attempts to use "electronic noses" to diagnosis tuberculosis using volatile organic compounds elicited from patient's sputum or breath. TB is not just a disease found in humans and also animal too.Archeologists have found that TB in the bones ofancient bison in Wyoming. These bison lived over 17,000 years ago. *Mycobacterium bovis* can still be found in many animals in the United States including cattle and deer.Approximately 1 million cattle are tested each year for TB.The cattle at most risk for TB are those that come into contact with wildlife that carry TB (like deer).It is possible for some animals to transmit TB to humans.In the 1930,American Florence Seibert PhD developed process to create a purified protein derivative of tuberculin (PPD) for the TB skin tests was not consistent or standardized.Seibert did not patent the technology, but the United States government adopted it in 1940.A more recent advancement in TB testing has been TB blood tests, or interferon – gamma release assays(IGRAs). Today we use both TB skin tests and TB blood tests to diagnose TB infection. Additional tests, like x - rays, are neede to diagnose TB disease. When TB was more common in the United States, public health departments often used mobile x-ray vans to test for TB. Mobile clinics are still use in today.



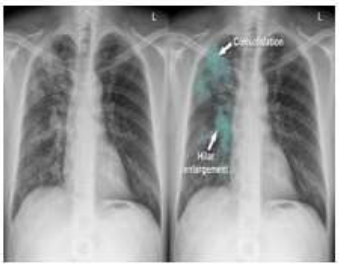
CLASSIFICATION

1. Pulmonary Tuberculosis
2. Avian Tuberculosis (Mycobacterium Avium : Of Birds)
3. Bovine Tuberculosis (Mycobacterium Bovis : Cattle)
4. Miliary Tuberculosi

The first reference to tuberculosis in non-European civilization is found in the Vedas. The oldest of them calls the disease yaksma. The Atharvaveda calls it balasa. It is in the Atharvaved as that the first description of scrofula is given. The Sushruta Samhita, written around 600 BC, recommends that the disease b treated with breast milk, various meat, alcohol and rest. Greek Galen, who became personal physician

To diagnosis a tuberculosis (TB) infection, your health care provider will do an exam that includes;

* Listening to you breathe with a stethoscope.
* Checking for swollen lymph nodes.
* Asking you question about your symptoms.

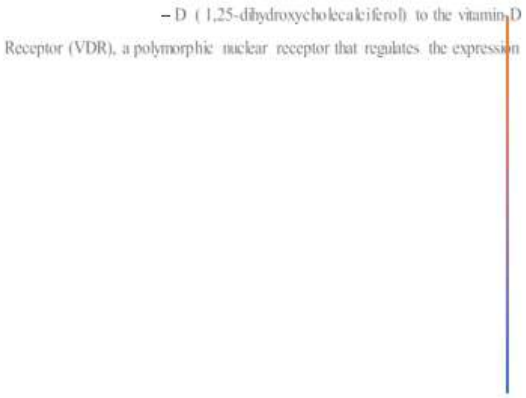


BLOOD TESTS

A sample of blood is sent to a lab. One lab test finds out whether certain immune system cells can "recognize" tuberculosis. A positive test shows that you have either a latent TB infection or active TB disease. Other tests of the sample can help determine if you have active disease.

X- RAY

A chest X-ray can show irregular patches in the lungs that are typical of active TB disease.The chest x-ray is useful fordiagnosis TB disease in the lungs, also known as pulmonary TB, is the most most common form of TB disease.



OTHER LAB TEST

Other lab tests that may be ordered include;

* Breath test
* Procedure to remove sputum from your lungs with a special tube.
* Urine test
* Test for fluid around the spine and brain, called cerebrospinal fluid.

NUTRACEUTICAL SPECIES IN TUBERCULOSIS

* Garlic
* Barbery
* Goldenrod
* Horsetail
* Vitamin – D

GARLIC



BOTANICAL NAME: Allium Sativum
BIOLOGICAL SOURCE: Garlic is the ripe bulb of *Allium Sativum* Linn..,
FAMILY: Liliaceae
GEOGRAPHICAL SOURCE: Garlic ocuurs in central Asia,Southern Europe, United state and also in India.
CHARACTERISTIC: It is a perennial herb having bulbs with several cloves,
enclosed in a silky white or pink membranous envelope.
TREATMENT FOR TUBERCULOSIS: Garlic is knowm to kill microbial strains, and itsactive compounds, allicin, kills various Microorganism. Here we have shown that allic not only reduce the bacterial burden in the lungs of mice infected with Mycobacterium tuberculosis (M.TB), but also induces strong anti – tubercular immunity.



VITAMIN-D

VITAMIN-D Includes the Following:

* Dairy Products
* Milk Products
* Beef liver
* Orange juice
* Cod liver oil

The likely mechanism through which vitamin-D may prevent or limit is through the binding of the bio Infection by Mycobacterium Tuberculosis Active form of vitamin of genes important for immune. Vitamin-D was used to treat TB. The most important vitamin-D is Sunlight.

BARBERRY



BOTONICAL NAME: Berberis vulgaris.
BIOLOGICAL SOURCE: It is found in various parts of the plant like roots, stemand sten bark.
FAMILY: Berberidaceae
GEOGRAPHICAL SOURCE: Asia, America, Europe, China, North Africa*CHARACTERISTICS;* Berberis thunbergii, commonly called Japanese
Barberry, is a spiny, broad-rounded, deciduous shrub with obovate green Leaves.
USES: Berberine treatment did not affect *M.TB* growth in axenic cultures, However, it showed increased bacterial killing in primary murine bone marrow –Derived macrophages and human monocyte- derived macrophages. As a Chinese And Native American traditional medicine, it has been used for treatment for Dysentry and Tuberculosis. Our results suggest that berberine adjunctive treatment can exert its beneficial effects depending on the inflammatory stage of the host during tuberculosis.

CONCLUSION

Communicable diseases is that can transmitted from one person to another and is caused by an infectious agent that is transmitted from a source or reservoir to a susceptible host. Communicable disease is one in which the causative organism or pathogen is carried from one person to another other directly or in directly. Communicable disease is also called as infectious disease. Infectious disease are caused by microorganism that can hijack the nutrients and cellular machinery in our bodies. The above disease we discussed about Tuberculosis, a death cause disease. We briefly explained about history, causes, prevention, diagnosis and nutaceuticals species involved in tuberculosis. *Mycobacterium tuberculosis* is also a major communicable disease.

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