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Role of Biological Elements of Goat for Curative / Preventive Measures against Tuberculosis

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ABSTRACT

This paper focus on the results of attempts to search the probable system and causes and their modes of action for treatment of tuberculosis by the goats' biological elements like blood, urine, excreta, sweat etc. For this object we carried out a simple experiment by performing Mantoux test on goat. The concept behind this is that if there is presence of any antitubercular antibodies in poor's blood and then the test will show positive result due to agglutination reaction; as *Acharya* stated the use of goat's blood for curative treatment of tuberculosis. These means that *Ayurvedic* classics assume that there should be something present in goat blood which acts as antituberculosis agents. As tuberculosis is mainly cured by two methods: either by using antimycobacterial drug or by enhancing the individual's immunity. This goat's blood as we assume it act as antitubercular agent then it should work as antimycobacterium, the other possibility is that the goals antibodies are not sensitive for tubercular antigen so that it has congenital immunity against tuberculosis. In this condition we can't isolate the antibodies from goat's blood for the curative purpose of tuberculosis. This paper will show the result of experiment and validity of concept that either goat's blood has curative property against tuberculosis or not.

Key words: Goat, Tuberculosis, Rajyakshma.

INTRODUCTION

In developing countries like India due to poor socio-economical condition as well as low standard of living, disease like Tuberculosis is very prevalent and effective a large group of population. Although modern science has developed a very effective regimen for tuberculosis, but due to its long duration of treatment with wide range of side effects and high

incidence of relapse it is not very suitable for human beings. According to new research it is found that by the year 2010, the *M. tuberculae* become resistant to the entire present drug which produces a serious crisis.^[1]

In *Ayurveda* classics a disease known as *Rajyakshma* is mentioned by *Acharyas* which has similar clinical feature as present in pulmonary tuberculosis for *Rajyakshma*.^[2]

It is mainly described as syndrome, collection of 11 symptoms.^[3] According to *Ayurveda*, *Rajyakshma* is fully curable as long as the person have good immunity i.e., *Akshinabalamansa*. In the treatment of *Rajyakshma* nearly every *Acharya* use one similar thing i.e., *Aja* (Goat's) biological element. *Sushruta* in his text especially quoted that excretes, urine, blood, meats and living with goat cure the tuberculosis.^[4] *Acharya Charaka* also quoted the use of goat's milk in the treatment mentioned the use of goat's blood for curative treatment of tuberculosis.^[5]

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AIMS AND OBJECTIVE

1. To search that whether goat blood has any curative property against tuberculosis and if it has then how it work.
2. To detect the presence of immunoglobulin in blood in order to search a hope for IV administration of its serum containing immunoglobulin or any other route through which it can be administered for treatment of tuberculosis.
3. To search that why *Acharya*, use only goat's blood for treatment of tuberculosis whether it possess any different thing.

As the tuberculosis is the most deteriorating disease and *Ayurveda* has no effective measure to treat these diseases effectively may be because we don't strictly follows the rule of *Ayurveda* on there is something which may act as anti tubercular agent is missing.

MATERIALS AND METHODS

10 goats were taken (both sexes are taken), with average weight, ranging between 4-8 years, all are healthy with no disease. Purified protein derivative.^[7]

Method

Every goat is inoculated with 10 IU of purified protein derivative^[8] after shaving at particular area by making a patch of 2 x 2 cm. The injection is given subcutaneously. After 72 hours the skin is observed to find discoloration and indurations. The thickness of indurations is measured by vernier caliper.

After 22nd day a second inoculation is done again by giving same amount of PPD i.e., 10 IU after shaving and making patch of 22 cm. area. Again, the skin is observed after 72 hours and thickness of indurations is measured. The immunological test is done by taking the blood from the jugular vein of goat after 72 hours of 1st and 2nd inoculation. TLC, DLC, ESR, Hb% of goat's blood is also calculated along with that a blood film is also made after 1st as well as 2nd inoculation.

OBSERVATION

In all ten goats after 1st inoculation there is discoloration of skin with indurations area of 2x2 cm.

and thickness greater than 40 microns, showing that Mantoux test^[9] is positive. The result is same after second inoculation. The immunological test is carried out on one goat and the result shows the decrease fashion in IgM count as follows.

Control group	1st group (After 1st inoculation)	2nd group (After 2nd inoculation)
0.25	0.15	0.13

The total leukocyte count is slightly raised with raised count of lymphocyte.

DISCUSSION

From above experiment it is clear that goat has congenital immunity against T.B. and B-cell of goat has no receptor for T.B. antigen, so there is no formation of immunoglobulin against tubercular antigen. As we know that immunity is of two type adaptive immunity and innate immunity (Natural or native immunity). Adaptive or Acquired immunity work through immunoglobulin channel and it is disease specific as it develops after the entrance of antigen into body whereas innate immunity is present by birth or which doesn't require immunoglobulin channel as it directly recognize antigen and kill it at cellular level. The main component of this Immunity are - Natural killer cell macrophage, and various plasma protein of complement system. As discoloration in skin is present which show that innate immunity is working but the antigen doesn't reach up to the level of adaptive immunity i.e., innate immunity is so strong that it checks the infection before the necessity of activating the adaptive immunity. This confirms the hope for possibility of finding some plasma protein of complement system in Goat's blood, which is strong anti mycobacterium.

A positive tuberculin test result signifies that the cell mediated hypersensitivity reaction against tuberculin antigen working but it doesn't differentiate between infection and disease. Positive Montoux test shows that innate immunity is working but how it works is not confirm by this test. It may work through natural killer cell or complement protein (mannose binding

protein or CRP) or it may act by activation of T-lymphocytes. Each T-cell is genetically programmed to recognize a specific cell bound antigen by mean of an antigen specific T cell receptor (TCR)5, CD4 and CDB are required to initiate signals that activate T cell that recognize antigen. When the T cell are activated by antigen and co-stimulator they secrete cytokinin. Under the influence of cytokinin called IL-2. The T-cell proliferates generating a large number of antigen specific lymphocytes.

In present experiment, the second inoculation is done after 22 days of 1st inoculation. This is because in T.B.^[10] There is type 2 hyper sensitivity reaction which mediate through activation of B-lymphocyte producing IgG, IgM and IgA,^[11] which take a time period of 2-3 weeks. But even after 22 days, there is no raised IgM count shows that B-cell are not activated at all may be due to absence of proper receptor for T.B. antigen, or may be because the antigen are totally killed by innate immunity.

CONCLUSION

From all above discussion, it is concluded that Goat has innate immunity against tuberculosis which may act through some specific complement cell. And this fact is well known to ancient *Acharya's* that's why they use *Aja* (Goat's) blood, faeces, urine and sweat etc. for curative purpose of tuberculosis. But as the Goat blood does not produce immune globulin against tuberculosis, we can't use its blood for isolation of immunoglobulin for giving it in injectable form. But Goat's blood can be use for curative purpose if it is given through oral route or per rectal i.e., through *Basti* method. And as *Aja* (Goat) is the only animal which is immune to tuberculosis. So, using its biological element is safest in tuberculosis, because there is possibility for its contamination by Tuberculin bacteria.

A further intense study and series of experiments are required to establish the anti-tubercular agent in Goat's blood. As this present experiment is carried out at every small scale, it is humble request to carry out the rest part of experiment in future for the establishment of anti-tubercular agent in Goat's blood.

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