Introduction:

As the microorganisms are rapidly undergoing genetic changes and developing resistance against many antibiotics and therapeutic agents for various diseases more quickly than new drugs are being made available so the war against the infectious diseases has become a never ending process. The history reveals the development of antibacterial agents, the scientific development of antimicrobial drugs can be observed in to three main stages. The first stage began with Erlich in the 1890”s, with the use of methylene blue for managing malaria, the organic arsenicals for trypanosomiasis (1904), and salvarsan 60 for syphilis (1909). Atebrin was made in 1932 and used for prophylaxis of malaria. In second stage discovery of of wonder drug Penicillin by Fleming in 1928 brought revolutionary change in therapeutics effectively controlled gonorrhea, strep throat, or pneumonia and wound. The third stage is known as “Golden era of antimicrobial therapy”, was ushered by Domagk in 1935 by demonstrating the therapeutic effect of prontosil, a sulfonamide dye, in pyrogenic infection. It was soon realized that the active moiety was para-amino benzene sulfonamide, and the dye part is not essential.

Infectious diseases raise awareness of our global vulnerability, the need for strong health care systems and the potentially broad and borderless impact of disease.

- Over 9.5 million people die each year due to infectious diseases – nearly all live in developing countries.
- Children are particularly vulnerable to infectious diseases. Pneumonia, diarrhea and malaria are leading causes of death among children under age 5; cerebral malaria can cause permanent mental impairment.
- Infectious diseases are also destructive to the health of adults, causing disability, a diminished quality of life, decreased productivity or death.
- Co-infection. People infected with one infectious disease become more susceptible to other diseases. Examples include: HIV/AIDS co-infection with tuberculosis or malaria co-infection with multiple neglected diseases.
- Some old infections are resurfacing which is really challenging task. Treatment of these infections with rapid development of resistance in organisms has added fuel to worsened situation.
• Some viral infections like Dengue, Hepatitis, Japanese Viral, and West Nile Viral Infections cause large scale deaths every year as epidemics.

Interventions, Illness and death from infectious diseases are particularly tragic because they are largely preventable and treatable with available interventions.

The pharmaceutical researchers have to keep in pace with these changes to control the infections by exploring newer anti-infective agents as many as possible. So there is need for developing the effective antimicrobial agents to combat infectious diseases. The ability of mankind to synthetically prepare medicinally important molecules during the past century has allowed for a continued decrease in the mortality rate from numerous diseases. The gravity of situation made WHO to resolve to put special focus on antimicrobial resistance and its global spread particularly the HIV/AIDS, tuberculosis and malaria epidemics.

These therapeutics agents bear wide range of structural differences and many of these compounds are having heterocyclic ring as their part structure. The substituted heterocyclic structures like coumarines, quinolines, quinines, furans imidazoles, pyrimidines, triazoles and benzo triazoles are proved to be effective antimicrobial agents. The literature survey reveals that heterocyclic compounds bearing benzotriazoles as part of structure showed valuable biological activity particularly antibacterial and antifungal activity. Benzotriazole derivatives have proven to be effective antimicrobials.

The proposed study is to develop newer Benzotriazole derivatives with promising antimicrobial activity.

An antioxidant is a molecule capable of inhibiting the oxidation of other molecules. Oxidation is a chemical reaction that transfers electrons from a substance to an oxidizing agent. Oxidation reactions can produce free radicals. In turn, these radicals can start chain reactions that damage cells. Antioxidants terminate these chain reactions by removing free radical intermediates, and inhibit other oxidation reactions. They do this by being oxidized themselves, so antioxidants are often reducing agents such as thiols, ascorbic acid or polyphenols.