

# Comparative Study of Widal and Typhidot Test for The Diagnosis of Typhoid and Antibiotics Sensitivity Pattern of Culture Positive *Salmonella*

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## ABSTRACT

**Introduction:** *Salmonella enteric* serovar *typhi* caused Typhoid fever which is an acute systemic infectious disease found in humans. Usually this disease mainly found in developing countries. Worldwide, it is still considered a serious health issue. It is estimated that annually 13 million cases has been reported in Asia. Furthermore, causing 6 lakh deaths worldwide per year. (Begum et al., 2009). The ratio of typhoid fever is high during late summer in Pakistan. In Pakistan typhoid fever is highly endemic, with epidemics occurring frequently in the late summer months. Mortality can be as high as 10% (Qamar, 2007). It has been documented that food sources such as meat products, poultry and eggs and meat act as a major risk of transmission to humans. Furthermore, fecal-oral route is the main form of transmission (Muna & Mohamad, 2015). Development of drug resistance among *serotypes of Typhi* in different regions of the world complicated the treatment. It is highly needed to develop rapid and accurate diagnosis and to prevent irrational use of antibiotics (Qamar, 2007).

Widal a serological diagnosis test used for typhi. It is usually used for diagnosis due to their low cost. Commercial kits are available for antigens of *Salmonella para typhi* A, B and C. Additionally, rapid slide test is mostly used techniques in local hospitals and labs due to its easily mode. The Widal test has been used normally in the diagnosis of typhoid and so remains the only practical test available in most developing countries.

### Objectives:

- To compare the Widal and Typhidot Test with Blood culture for the Diagnosis of Typhoid
- To determine the antibiotic susceptibility of *Salmonella* isolated from Blood culture.

**Methodology:** In the present study, both Typhidot and slide agglutination Widal test (WAST) were used to investigate typhoid fever in 180 patients. The study population was divided into 06 age groups. For each age group 30 samples were collected and tested for WSAT and Typhidot IgG & IgM. Only positive on WSAT, Typhidot IgG & IgM or positive on both were tested for blood culture. Further, antimicrobial testing was also carried out.

**Results:** 107 Patients who had a positive result in either Widal or Typhidot IgM IgG or both were considered positive. 104 (57.7%) were positive on Typhidot, 100 (55.5%) were positive on WSAT and 35 were positive on blood culture which were also positive on WSAT and Typhidot. The sensitivity, specificity, Negative Productivity Value (NPV) and Positive Negative Productivity Value (PPV) of WSAT were 73.5, 61, 71 and 64% respectively and for Typhidot 94.6, 81.6, 93.6 and 84.6% respectively. The antimicrobial susceptibility testing results showed the highest level of resistance against Ampicillin and Amoxicillin (80 and 71.4% respectively). All the isolates were completely (100%) sensitive against Moxifloxacin and Levofloxacin.

Ciprofloxacin, Amikacin and Ceftriaxone show 97.1% sensitivity and 88.5% sensitive against Cefixime and Cefotaxim.

**Conclusions:** Typhidot test is a highly sensitive and specific test for diagnosis typhoid fever. It is a rapid, easy to perform, more reliable test for typhoid fever as compared to WSAT and can be useful in early institution of therapy.

**Keywords:** Typhidot, Positive Negative Productivity Value, Moxifloxacin, Typhoid fever

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