

Full Length Research Paper

# Anti-toxins weakness of a strain of SALMONELLA detached from a newborn child gave loose bowels in Delta, Nigeria

Oghezi .O.F

Oghara Teaching Hospital, Delta State, Nigeria.  
E-mail: [ogheziufe@yahoo.com](mailto:ogheziufe@yahoo.com).

Accepted 28 May, 2017.

**SALMONELLA** was distinguished in the feces test of a seven months old child showing the runs and hospitalized at the Oghara Teaching Hospital, Delta State, Nigeria.. The disengage was urease negative, citrate use positive, indole negative, methyl red positive yet Voges-Proskauer negative. It was motile, catalase negative and unfit to create hydrogen sulfide. It could mature glucose with the creation of corrosive and gas yet unfit to age lactose and sucrose. The life form was touchy to amoxicillin, cotramoxazole, nitrofurantoin, gentamicin, ofloxacin and antibiotic medication yet impervious to nalidixic corrosive and augmentin

**Key words:** Anti-toxins weakness, *Salmonella*, loose bowels, antibiotic medication, ofloxacin.

## INTRODUCTION

Looseness of the bowels is a gastrointestinal contamination characterized as an adjustment in the consistency of stool to being strangely free or liquid and an expansion in the recurrence of stool to more than its ordinary (Akinbami, 1999). It is an intestinal issue portrayed by strange smoothness and recurrence of fecal clearings. For the most part, the aftereffect of expanded motility in the colon might be an essential side effect of such hidden issue as dysenteric illnesses, lactose bigotry, gastrointestinal tumors and incendiary entrail maladies (Khan-Mohammed et al., 2005). Around the world, diarrheal sicknesses are second just to respiratory illnesses as a reason for grown-up mortality. They are the main source of youth passing in a few sections of the world (Prescott et al., 2005). They contribute significantly to pediatric dreariness and mortality around the world (Akinbami, 1999). As indicated by the World Health Organization, assessments of 10 million youngsters kick the bucket from diarrheal sicknesses every year prior to their fifth birthday celebration (Clarke et al., 2002). During childbirth, the digestive tract is regularly sterile yet life forms are later presented with nourishment. In bosom encouraged youngsters, the digestive tract contains substantial quantities of lactic corrosive Streptococci and Lactobacilli. In bottle-nourished kids, blended greenery exists in the gut and Lactobacillus is less dominating (Brocks et al., 2003). The gastrointestinal tract of people is

the ordinary living space for a wide range of gram antagonistic bacilli, the vast majority of which have a place with the family Enterobacteriaceae (Graham et al., 2007). Various genera inside the family are human intestinal pathogens. These incorporate Shigella, Yersinia and Salmonella (Brock and Madigan, 1999). Salmonella are a gathering of motile pole molded microbes living in the intestinal tracts of creatures and feathered creatures. They cause intestinal ailment (Salmonellosis) in people and are generally obtained through ingestion of defiled sustenances or beverages (Brock and Madigan, 1999). Both youthful and old with debilitated insusceptible frameworks from maladies, for example, AIDS or because of growth medicines are most helpless (Pelczar et al., 1997). Salmonella have an assortment of antigens which shape the reason for serological characterization. The two noteworthy sorts of antigens related with Samonella are the substantial antigens which are lipoprotein-polysaccharides related with bacterial cell divider and the proteinous flagella antigens, related with the flagella, utilized by the microscopic organisms for development (Pelczar and Reid, 1993 ). Non-motile mutants of Salmonella may likewise happen (Pelczar et al., 1997). Predominance of diarrheal contaminations in Oghara, Nigeria has been especially high as of late. Salmonella has been identified in feces tests of various people in the group. The present examination was intended to decide

**Table 1.** Physical characteristics of samples.

Sample	Texture	Appearance
1	Semi solid	Non mucoid, non bloody
2	Semi solid	Non mucoid, non bloody
3	Semi solid	Non mucoid, non bloody
4	Semi solid	Non mucoid, non bloody
5	Liquid	Non mucoid, non bloody
6	Liquid	Mucoid
7	Semi solid	Non mucoid, non bloody
8	Liquid	Non mucoid, non bloody
9	Liquid	Mucoid
10	Semi solid	Non mucoid, non bloody
11	Semi solid	Non mucoid, non bloody
12	Semi solid	Non mucoid, non bloody
13	Liquid	Bloody

**Table 2.** Biochemical reactions.

Test	Observation
Urease	Negative
Citrate	Positive
Indole	Negative
Methyl red	Positive
Voges-Proskauer	Negative
H <sub>2</sub> S production	Positive
Catalase	Negative
Motility	Positive
Gram stain	Gram negative bacilli

the anti-microbials weakness example of a strain of this living being secluded from the feces test of a seven months old newborn child displaying looseness of the bowels.

## MATERIALS AND METHODS

### Collection of samples

Feces tests were gathered from patients, including a seven month old newborn child having typhoid fever, gave loose bowels and hospitalized at the Oghara Teaching Hospital, Delta State, Nigeria. The specimens were, heaps of patients, into all inclusive jugs and named. Accumulation was under aseptic conditions to keep away from tainting. They were conveyed to the research facility for prompt examination (Olutiola et al., 1991). The time of study was amongst June and December 2008.

### Media

Media used were MacConkey agar, *Salmonella-Shigella*

agar (SSA) and nutrient agar. They were of analytical grade and prepared according to manufacturer's specifications.

### Biochemical tests and staining method

The biochemical tests carried out were motility, urease, Koser's citrate utilization, catalase, indole, hydrogen sulphide production, methyl red Voges-Proskauer (MRVP) sugar fermentation tests and Gram staining.

### Antibiotics susceptibility test

Antibiotics susceptibility was carried out on *Salmonella* positive isolate from the seven months old infant using standard disc diffusion method.

Diagnostic sensitivity agar (DST) (Mueller Hinton Agar) (Oxoid) was employed. Gram negative discs (Oxoid) were used. Zones of inhibition were measured and

**Table 3.** Sugar fermentation test.

Test	Observation
Lactose	Nil
Sucrose	Nil
Glucose	AG

A, Acid production; G, Gas production; AG, Acid and gas production; Nil, No acid, no gas production.

**Table 4.** Antibiotics susceptibility of *Salmonella* isolated from stool sample of a seven month old infant.

Antibiotics	Concentration ( $\mu\text{g}$ )	Reaction
Amoxillin	25	S
Cotramoxazole	25	S
Nitrofurantoin	300	S
Gentamicin	10	S
Nalidixic acid	30	R
Ofloxacin	30	S
Augmentin	30	R
Tetracycline	30	S

R, Resistant; S, Sensitive

recorded.

### Isolation of *Salmonella*

Samples were inoculated onto MacConkey agar plates and incubated at 37°C for 24 h. Non-lactose fermenters suspected to be *Salmonella* species were subcultured onto plates of Salmonella-Shigella agar (SSA). Incubation was at 37°C for 24 h. Black coloured colonies suspected to be *Salmonella* species were re-cultured onto SSA to obtain pure colonies. The pure colonies were further cultured onto nutrient agar slants for preservation and biochemical tests (Olutiola et al., 1991).

### RESULTS

Thirteen stool samples were analysed in order to isolate and identify *Salmonella*. Five of the samples were liquid, eight were semi-solid and two mucoid in texture. One sample was bloody (Table 1). Five of the samples were positive for *Salmonella*.

The isolate from the seven months old infant was found to be gram negative. Confirmation was pinkish red colour of the bacilli when viewed under oil immersion objective of a binocular microscope (Table 2).

The isolate was motile, confirmed by growth away from the line of stab of the motility test medium after incubation at 37°C for 7 days. Examination was on a daily basis (Table 2).

The isolate was able to utilize citrate as sole carbon source shown as the change in colour of the inoculated koser citrate medium from green to blue after incubation at 37°C for 5 days (Table 2).

The isolate was catalase negative. No bubbles were evolved when hydrogen peroxide was added to the growth (Table 2).

The isolate was indole negative indicated by the absence of colour change to red when Kovac's reagent was added to the inoculated test medium after 7 days incubation at 37°C (Table 2).

After 5 days incubation at 37°C, the isolate was observed to be methyl red positive but Voges-Proskaur negative (Table 2) The isolate was able to ferment glucose indicated by the production of acid and gas (colour changes from red to yellow and the presence of bubbles in inverted Durham tubes). It was unable to ferment lactose and fructose (Table 3).

The isolate was resistant to augmentin and nalidixic acid but susceptible to amoxillin, cotrimoxazole, nitrofur-antoin, gentamicin, ofloxacin and tetracycline (Table 4).

### DISCUSSION

*Salmonella* are ubiquitous pathogens of humans and animals (Brock and Madigan, 1999). *Salmonella* was isolated from some of the feecal samples of individuals having diarrhea from the Oghara Teaching Hospital, Delta State, Nigeria.

Several factors may be responsible for the presence of *Salmonella* in fecal samples. The consumption of contaminated food or drinks is one of such factors. Contamination could also be through improper handling of food or drinks, consumption of untreated water from wells, streams, rivers and boreholes.

Most individuals infected with *Salmonella* develop diarrhea, fever and abdominal cramp 12-72 h after ingestion (Brooks et al., 2003). Salmonellosis ranges, clinically, from the common Salmonella gastroenteritis (diarrhea, fever and abdominal cramp) to enteric fever (including typhoid fever) out (Gruenewald et al., 1999). Two main species of Salmonella: *Salmonella typhi* and *Salmonella paratyphi* are frequently encountered in these regions.

The species isolated from the seven months old infant was susceptible to amoxicillin, cotrimoxazole, nitrofurantoin, gentamicin, ofloxacin and tetracycline but resistant to nalidixic acid and augmentin.

Antibiotics resistance could result from indiscriminate use of antibiotics. The organism develops resistance plasmids which can be transferred, by mutation, to sub-sequent generations of the organism (Bastarrachea, 1998; Cochella and Green, 2004).

Awareness should be an important component of health education on food and water borne infections in these regions. People should also be educated on personal and environmental hygiene. Proper treatment of consumed water should be imparted, most especially, to rural dwellers who have limited access to chlorine treated, pipe-borne water. Education and awareness at the primary, secondary and tertiary institutions of learning should be paramount.

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- which are life- threatening febrile systemic illnesses requiring prompt attention and antibiotic therapy (Centre for Disease Control and Prevention, 2003).
- Five out of the thirteen samples were positive for *Salmonella* on the SSA media. The diagnosis of salmonellosis requires bacteriological isolation of the organism from appropriate clinical specimen and confirmation through biochemical procedures. Serological tests which include the identification of both the somatic and flagella antigens of Salmonella can be further carried
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