

## AN OUTBREAK OF SALMONELLOSIS IN QUAILS

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## HISTORY

An outbreak of a disease causing heavy economical losses in quails was brought into notice of Microbiology Section, College of Veterinary Sciences, Lahore. History revealed that the disease caused high morbidity and mortality amongst young quails. The birds of all ages were susceptible to the disease. The birds were dull depressed and were having pasting on the vent. There was reduction in feed consumption. The birds were medicated without any fruitful response.

## LABORATORY FINDINGS

Samples of 13 quails of different age groups (one week old-birds; two week old-6 birds; adult-2 birds) and 35 eggs were received from a quail rearing farm for diagnosis and proper control of the problem.

On antemortem examination, the birds appeared sleepy and showed nervous symptoms, staggering gait and incoordination of limbs. On postmortem examination, the spleen was congested; livers discoloured and had haemorrhagic striations and kidneys were enlarged and congested. There was peritonitis and severe enteritis.

The liver samples were processed for isolation of the organism and antibiogram assay. The organism was aerobic and grew well on nutrient agar, MacConkey's agar and Salmonella Shigella agar (S.S. agar) at 37°C in 24 hours. The organism showed round and smooth colonies on nutrient agar. On MacConkey's agar, the colonies were lactose-non-fermenters. On S.S. agar, the colonies were white with black centers.

The organisms were Gram negative, pleomorphic rods and non-spore former. The organism showed biochemical properties as shown in Table 1.

Out of 35 eggs, 20 were embryonated (A) and 15 were non-embryonated (B). From non-embryonated eggs, the yolk was transferred to selenite broth, where it showed turbidity after 18 hours post incubation at 37°C. The yolk samples were septic and liver of the embryos were pale in colour. Pure growth of the lactose non-fermenter organism was recovered from the livers and yolk. The antibiogram assay of the isolated bacteria is presented in Table 2.

Table 1: Biochemical properties of the isolated bacteria

Sugars	Production Acid + Gas	Other reactions	Results
Glucose	+	Nitrate reduction	+
Adonitol	+	Urea decomposition	+
Arabinose	+	Gelatin liquefaction	+
Sorbitol*	+	Indole production	+
Dulcitol	+	Ornithine decarboxilation	+

## SERODIAGNOSIS

The bacterial growth from nutrient agar when mixed with a drop of salmonella polyvalent somatic antigen A-G, on a clean glass slide showed positive reactions and when mixed with antisera against polyvalent H antigen (phase 1 + 2) gave negative reaction. The bacterial growth when mixed with somatic D-9 antiserum, showed positive reaction.

The signs, postmortem lesions, cultural characteristics and serological reaction revealed that the isolated organism is *Salmonella pullorum*.

Table 2: Antibiogram assay of the isolated bacteria

Drugs	Sensitivity
Avitril	+++
Norfloxacin	+++
Streptomycin	---
Amoxicillin	+++
Gentamycin	+++
Imequyl	+++
Chloramphenicol	+++
Kanamycin	---
Oxytetracyclin	---
Penicillin	---
Ampicillin	---
Erythromycin	---

Result + = Sensitive      - = Resistant

## DISCUSSION

Poultry constitute an important reservoir for salmonella, however, salmonellosis in quails is rare because its production on commercial scale in Pakistan is very scanty. Adults may be symptomsless carrier of the pathogen and intestinal tract and ovaries are the

organs where the pathogen mainly exists. The droppings and eggs laid by adults are major sources of infection on farms and hatcheries, respectively. The droppings contaminate the environment, feed, water and litter, thus spreading the infection horizontally. In the present study, it was observed that young chicks were highly susceptible to salmonellosis resulting in high morbidity and mortality. The adults showed nervous symptoms including staggering, incoordination of the legs, loss of appetite, increased thirst, respiratory distress and vent pasting. Similar type of clinical signs in poultry are observed by Kapoor *et al.* (1981), Ghosh *et al.* (1987) and Ghosh *et al.* (1990).

The dead quails showed hyperaemic liver and congested spleen. postmortem report and clinical signs can never confirm the disease. Pure growth of non-lactose fermenter from internal organ such as liver on MacConkey's agar, yellow colonies with black centres on S.S. agar and biochemical reaction indicated that isolated bacteria were salmonella. Similar type of diagnostic process for identification of salmonella species was adapted by Buxton and Fraser (1977). The agglutination test showed that bacterial isolate was *Salmonella pullorum-gallinarum*. *Salmonella pullorum-gallinarum* is devoid of flagellar antigen while the both have somatic antigen (0-9) (Buxton and Fraser, 1977).

Failure of response of birds to therapeutic agents on the farm might be due to development of resistance as suggested by Hartley and Richmond (1975) and Smith (1975).

The disease is a major havoc on the farms and may spread to the hatching chicks which is the main cause of mortality into first week of life. However, improvement of hygienic status of farms and provisions of balanced nutrition free from mycotoxins and routine use of probiotics may potentiate the resistance level of the quails against the disease.

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