BRIEF NOTE

**An Outbreak of *Salmonella typhimurium* subserovar *copenhagen*
Infection in Pigeons (*Chalcophaps indica*)
imported from Hong Kong**

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During a recent study of viral diseases of psittacine birds, we encountered an outbreak of salmonellosis caused by *Salmonella typhimurium* subserovar *copenhagen* in pet pigeons (*Chalcophaps indica*) originating from Hong Kong. Isolations of *S. typhimurium* have been reported among several species of birds [1, 3, 7-10] including domestic and feral pigeons in Japan [6]. However, little information is available concerning the occurrence of salmonellosis in pigeons imported as pets within Japanese trade.

In late May of 1980, fifty pigeons bred in Hong Kong were imported as a single lot to a dealer. Within 5 days after quarantine, a total of 20 birds had died. Moribund pigeons exhibited clinical signs of watery diarrhea, ruffled feathers and anorexia. The birds were adults of unknown age and reared in a room (8 m²) having a concrete floor. Other pet birds, including psittacine species, in similar rooms of the same building did not show clinical signs of the disease. Six of the dead pigeons were examined by necropsy, but characteristic lesions of grayish-white necrotic foci (1-2 mm in diameter) were found in the livers and spleens of only two birds. The above

organs and lesion material were cultured on DHL agar plates (Nissui). Because the pigeons had been treated with tetracycline (TC) after the onset of the disease, a survey for detection of carrier birds was made by cultivation of 97 fecal samples randomly collected from the floor during June. Fecal materials (about 1 g) suspended in a 0.07 M phosphate-buffered saline (pH 7.6) were incubated in selenite broth (Nissui) at 37°C for 48 hours. A loopful from each of the broth cultures was inoculated onto DHL agar. *Salmonella*-like colonies on DHL agar were examined biochemically and serologically. Tartrate utilization tests [2] were modified with methods of Kauffmann and Petersen [5]. Drug sensitivity of the isolates was tested by the agar dilution method using chloramphenicol (CP), TC, streptomycin (SM), and kanamycin (KM). Drug-resistant isolates obtained were re-examined in detail and detection of R plasmids was made according to a previous description [6]. Biotyping of isolates was done by the method of Duguid et al. [2].

Suspected *Salmonella* organisms were isolated in pure culture from livers and spleens of all 6 cases examined by necropsy and isolates were made from 21 of the fecal

Table 1. Isolation of *S. typhimurium* subserovar *copenhagen* from dead pigeons

Date of sampling	Sample	No. of <i>Salmonella</i> -positive cases
May 30, 1980	livers and spleens	6/6 *
June 2	feces	13/20
9	"	6/20
16	"	2/13
23	"	0/44

* No. positive/No. examined.

samples collected in June (Table 1). On the basis of biochemical and serological tests all of the isolates were *S. typhimurium* subserovar *copenhagen*. Biotyping results indicated the isolates were all of type 25 hi. The organisms were sensitive to CP (3.13 µg/ml), TC (3.13 µg/ml), and KM (3.13 µg/ml), but resistant to SM (12.5 µg/ml). Ten representative isolates reexamined were resistant to SM alone, and had conjugative R plasmids conferring SM resistance.

Most recently, Ishiguro and Sato [4] have reported that the *S. typhimurium* subserovar *copenhagen* isolates of pigeon origin from Japan were restricted to types 25 hi, 25 fhi and 27 hi [2]. Moreover, Sato et al. [6] indicated that *Salmonella* of pigeon origin had a higher frequency of sensitivity to drugs than those of other host origins. Our isolations of the 25 hi strain is consistent with the result of Ishiguro and Sato [4]. That these pigeons developed clinical signs of disease soon after importation indicated these birds were carrying the organism which may have been expressed due to stress of handling and transpor-

tation. This situation, common to pet industries in general, emphasizes the importance of strict quarantine practices with regard to continued movement of pet bird species into and within Japan or elsewhere.

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要 約

輸入愛玩用ハトに発生したコペンハーゲン型ネズミチフス菌感染症（短報）：沢 英之・平井克哉（岐阜大学農学部家畜微生物学教室）——香港から1群50羽輸入され、検疫の数日後某業者において斃死した20羽のキンバト（*Chalcophaps indica*）から *Salmonella typhimurium* subserovar *copenhagen* が分離された。本菌は Duguid らの生物型が 25 hi で、SM 耐性の R プラスミッドを持っていた。愛玩用鳥類については輸入検疫の検討が望まれる。