

# Multi Drug Resistant *Pseudomonas aeruginosa* From Wild Hanuman Langur in India

I Samanta\*, S. N. Joardar, Palas Das, D. Ghosh<sup>1</sup>, T. K. Sar<sup>2</sup>, S. Taraphder<sup>3</sup>

<sup>1</sup> Department of Veterinary Surgery & Radiology, WBUAFS, Kolkata.

<sup>2</sup> Department of Veterinary Pharmacology & Toxicology, WBUAFS, Kolkata

<sup>3</sup> Department of Animal Genetics and Breeding, WBUAFS, Kolkata.

## Correspondence:

✉ [isamanta76@gmail.com](mailto:isamanta76@gmail.com)

\* Department of Veterinary Microbiology West Bengal University of Animal & Fishery Sciences 37, K.B. Sarani, Kolkata- 700037, West Bengal, India.

## Abstract

*Pseudomonas aeruginosa* is a Gram negative rod shaped bacterium, opportunistic pathogen. It is associated with the infection during low immunity status of the host. However in all warm blooded animal it is associated with the wound infection. A wild hanuman langur (*Semnopithecus entellus*) with compound fracture in the leg region was referred to the Clinics, Faculty of Veterinary and Animal Sciences, West Bengal University of Animal & Fishery Sciences (WBUAFS), Kolkata, West Bengal, India by Forest Department, Government of West Bengal. The amputation of leg was performed under proper anaesthesia. A surgical wound with pus was detected during post operative care. The wound was not responding to the prescribed antibiotic and other supportive therapy. The pus sample collected in sterile vial was referred to Department of Veterinary Microbiology of the University for culture and antibiotic sensitivity. As per the staining property, colony characteristics and biochemical profile, the isolated bacterium was identified as *Pseudomonas aeruginosa*. The isolate was found resistant to all of the studied antibiotics except enrofloxacin. The antibiogram result was communicated to the Clinics that effectively cured the surgical wound in the affected langur. Dosage of used enrofloxacin was 5 mg / kg body weight for 5 days.



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## Introduction

*Pseudomonas aeruginosa* is a Gram negative rod shaped bacterium, opportunistic pathogen. It is associated with the infection during low immunity status of the host. However in all warm blooded animal it is associated with the wound infection [1]. The present case report describes isolation of *Pseudomonas aeruginosa* from the surgical wound of a wild hanuman langur (*Semnopithecus entellus*) in West Bengal state of India. Multi drug resistance is often encountered for these bacteria isolated from different species of animals [2].

## Methods

A wild hanuman langur (*Semnopithecus entellus*) with compound fracture in the leg region was referred to the Clinics, Faculty of Veterinary and Animal Sciences, West Bengal University of Animal & Fishery Sciences (WBUAFS), Kolkata, West Bengal, India by Forest Department, Government of West Bengal. The amputation of leg was performed under proper anaesthesia. A surgical wound with pus was detected during post operative care. The wound was not responding to the prescribed antibiotic and other supportive therapy. The pus sample collected in sterile vial was referred to Department of Veterinary Microbiology of the University for culture and antibiotic sensitivity.

In the Microbiology laboratory the pus sample was inoculated into the peptone water and incubated at 37°C. On the next day it is subcultured into nutrient agar and blood agar (HiMedia, India). In nutrient agar greenish convex colonies with a characteristic odour was found. In blood agar the colonies were haemolytic. Single colony was identified on the basis of its growth in Pseudomonas isolation agar (HiMedia, India), Gram staining, motility and different biochemical tests like catalase, oxidase, glucose fermentation, indole, H<sub>2</sub>S production, Voges – Proskauer, methyl red and reduction of nitrate to nitrite as per the standard techniques [3]. Antibiotic sensitivity profile of the isolated bacterium was obtained by disc diffusion method [4] using enrofloxacin (5 mcg), sulphamethizole (300 mcg), furazolidone (50 mcg), tetracycline (30 mcg), ceftizoxime (30 mcg), ceftriaxone (30 mcg) and colistin (10mcg) discs (HiMedia, India).

## Results

In Pseudomonas isolation agar characteristic yellowish-green coloured colonies were found. Gram negative small rods were observed after staining of the isolate. The isolate was motile. Biochemical tests revealed positive for catalase, oxidase, glucose fermentation and negative for indole, H<sub>2</sub>S production, Voges – proskauer, methyl red and reduction of nitrate to nitrite. As per the staining property, colony characteristics and biochemical profile, the isolated bacterium was identified as *Pseudomonas aeruginosa*. The isolate was found resistant to all of the studied antibiotics except enrofloxacin.

## Discussion

Similarly *P. aeruginosa* was isolated from laboratory reared Japanese monkeys [5], monkey in zoo settings [6]. Some cases of melioidosis in rhesus monkey [7] and banded leaf monkey [8] caused by *Pseudomonas pseudomallei* (*Burkholderia pseudomallei*) are reported. However there is no description of *P. aeruginosa* isolation from wild hanuman langur to compare the present report. Antibiogram showed sensitivity to enrofloxacin only. It is consistent with our earlier finding of *P. aeruginosa* from broiler poultry in this region of the world [9]. Infection with multi drug resistant *Pseudomonas aeruginosa* is a serious concern. It carries multi drug resistance plasmids as well as it develops mutational resistance to cephalosporins. It is also found to develop the resistance locally [10].

The antibiogram result was communicated to the Clinics that effectively cured the surgical wound in the affected langur. Dosage of used enrofloxacin was 5 mg / kg body weight for 5 days.

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## References

1. Songer JG, Post, KW (2005) In: Veterinary Microbiology Bacterial and Fungal agents of animal diseases, Saunders Elsevier, Netherlands, Pp. 154-162.
2. Kalter SS (1989) Infectious diseases of nonhuman primates in a zoo setting. Zoo Biol 8: 61-76.
3. Quinn PJ, Carter ME, Markey B, Carter GR (1994) In: Clinical Veterinary Microbiology, 2<sup>nd</sup> ed. Wolfe Publications, Spain. Pp. 255-258.
4. Bauer AW, Kirby WM, Sherris JC, Turck M (1966) Antibiotic susceptibility testing by a standardized single disk method. Am J Clin Pathol 45: 493-496.
5. Benno Y, Itoh K, Miyao Y, Mitsuka T (1987) Comparison of fecal microflora between wild Japanese monkeys in snowy area and laboratory reared Japanese monkeys. Jpn J Vet Sci 49: 1059-1064.
6. Fritz P E, Miller JG, Slayter M, Smith T J (1986) Naturally occurring melioidosis in a colonized rhesus monkey (*Macaca mulatta*). Lab Anim 20: 281-285.
7. Livermore DM (2002) Multiple mechanisms of antimicrobial resistance in *Pseudomonas aeruginosa*: our Worst Nightmare? Clin Infect Dis 34:634-40.
8. Mutalib AR, Sheikh-Omar AR, Zamri M (1984) Melioidosis in a banded leaf-monkey (*Presbytis melalophos*). Vet Rec 115:438-439.
9. Samanta I, Mahanti A, Dhara A, Isore DP, Joardar SN (2009) Association of *Pseudomonas aeruginosa* with broiler mortality in an organized farm of West Bengal. Ind J Anim Hlth 48: 117-118.
10. Livermore DM (2002) Multiple Mechanisms of Antimicrobial Resistance in *Pseudomonas aeruginosa*: Our Worst Nightmare? Clin Infect Dis 34:634-40.

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