

Detection of *Salmonella enterica* in Magellanic penguins (*Spheniscus magellanicus*) of Chilean Patagonia: evidences of inter-species transmission

C. DOUGNAC¹†, C. PARDO²†, K. MEZA³, C. ARREDONDO², O. BLANK⁴,
P. ABALOS^{3,5}, R. VIDAL^{5,6}, A. FERNANDEZ⁷, F. FREDES^{3,5} AND
P. RETAMAL^{3,5}*

¹ Programa de Doctorado en Ciencias Silvoagropecuarias y Veterinarias, Universidad de Chile, Santiago, Chile

² Programa de Magister en Ciencias Animales y Veterinarias, Universidad de Chile, Santiago, Chile

³ Departamento de Medicina Preventiva Animal, FAVET, Universidad de Chile, Santiago, Chile

⁴ Centro de rehabilitación de aves Leñadura, Punta Arenas, Chile

⁵ Emerging and Re-emerging Zoonoses Research Network, Santiago, Chile

⁶ Instituto de Ciencias Biomédicas, Universidad de Chile, Santiago, Chile

⁷ Instituto de Salud Pública, Ministerio de Salud, Santiago, Chile

Received 30 January 2014; Final revision 3 July 2014; Accepted 21 July 2014;
first published online 22 August 2014

SUMMARY

Patagonia in southern South America is among the few world regions where direct human impact is still limited but progressively increasing, mainly represented by tourism, farming, fishing and mining activities. The sanitary condition of Patagonian wildlife is unknown, in spite of being critical for the assessment of anthropogenic effects there. The aim of this study was the characterization of *Salmonella enterica* strains isolated from wild colonies of Magellanic penguins (*Spheniscus magellanicus*) located in Magdalena Island and Otway Sound, in Chilean Patagonia. Eight isolates of *Salmonella* were found, belonging to Agona and Enteritidis serotypes, with an infection rate of 0.38%. Resistance to ampicillin, cefotaxime, ceftiofur and tetracycline antimicrobials were detected, and some of these strains showed genotypic similarity with *Salmonella* strains isolated from humans and gulls, suggesting inter-species transmission cycles and strengthening the role of penguins as sanitary sentinels in the Patagonian ecosystem.

Key words: Chile, Patagonia, penguins, *Salmonella enterica*, transmission.

INTRODUCTION

Penguins are long-lived aquatic birds exclusively distributed in the Southern hemisphere and are catalogued as marine sentinels of the ocean's health. This condition has been established, among other reasons, due to their large land breeding colonies [1], and being totally dependent on marine resources [2]. Therefore their population

alterations reflect the regional oceanic variations more accurately and faster than any other aquatic bird [1].

The *Spheniscus* genus includes four species which inhabit the coastal areas from the Pacific and Atlantic Oceans. The Magellanic penguin (*Spheniscus magellanicus*) is distributed in southern South America, including Chile and Argentina. It is the most abundant temperate penguin in the world [1], although with a declining population that has caused its 'Near Threatened' classification by the International Union for the Conservation of Nature [3]. During the reproductive season (spring and summer) it is possible to observe colonies from 30° S in the Pacific and 42° S in the Atlantic

* Author for correspondence: Dr P. Retamal, Departamento de Medicina Preventiva Animal, FAVET, Universidad de Chile, Av. Sta Rosa 11735, Santiago, 8820808 Chile.
(Email: pretamal@uchile.cl)

† These authors contributed equally to this work.