

Isolation and characterization of *Campylobacter* spp. in feces of companion cats in Ahvaz district by culture and PCR methods

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Abstract

Campylobacteriosis is a zoonotic disease which causes enteritis in human, dog, and cat, as well as other domestic and wild animals. The present study aimed to detect of campylobacter infection in companion cats referred to the Veterinary Hospital of the Shahid Chamran University of Ahvaz. Risk factors such as age, gender, breed; nutrition status, and lifestyle (open or close environment) were reviewed also. Fecal samples were examined by two methods of culture and PCR from one hundred one of cats (thirty-five diarrheic and sixty six clinically healthy). Only two samples were positive in culture method (1.98%), but *Campylobacter* species were detected in thirty-seven samples by PCR; which yields an overall prevalence of 36.63%. The most prevalent species of campylobacter among the referred cats were *C. upsaliensis* and *C. coli* with 23 and 7 out of 37 identified isolates (62.16% and 18.91%) respectively. A lower prevalence was observed for *C. jejuni* in four identified isolates (10.81%) and for concurrent infections in two cases (*C. coli* + *C. jejuni*) (5.40%) and one case (*C. upsaliensis*+ *C. lari*) (2.70%). The prevalence of infection was 57.14% and 25.75% in diarrheic and healthy cats respectively. There was a significant difference for campylobacter infection between the healthy and diarrheic cats in the PCR method, as well as, age, breed; nutrition status and lifestyle showed a significant difference, but there was no significant difference for gender factor in campylobacter infection. In conclusion, because of the frequent presence of campylobacter species in feces of cats, these bacteria can constitute a public health hazard. Accordingly, periodic tests and isolation of diarrheic cats from others are important, especially cats that eat raw meat and live in a shelter.

Key words: *Campylobacter*, Culture, PCR, Cat, Ahvaz

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References

- Acke, E.; Mc Gill, K.; Golden, O.; Jones, B.R.; Fanning, S. and Whyte, P. (2009). Prevalence of thermophilic *Campylobacter* species in household cats and dogs in Ireland. *Veterinary Record*, 164 (2): 44-47.
- Andrzejewska, M.; Szczepanska, B.; Klawe, J.J.; Spica, D. and Chudzinska, M. (2013). Prevalence of *Campylobacter jejuni* and *Campylobacter coli* species in cats and dogs from Bydgoszcz (Poland) region. *Polish Journal of Veterinary Sciences*, 16 (1): 115-120.
- Engvall, E.O.; Brandstrom, B.; Andersson, L.; Baverud, V.; Trowald-Wigh, G. and Englund, L. (2003). Isolation and identification of thermophilic *Campylobacter* species in fecal samples from Swedish dogs. *Scandinavian Journal of Infectious Diseases*, 35 (10): 713-718.
- Gargiulo, A.; Rinaldi, L.; D'Angelo, L.; Dipineto, L.; Borrelli, L.; Fioretti, A. and Menna, L.F. (2008). Survey of *Campylobacter jejuni* in stray cats in southern Italy. *Letters in Applied Microbiology*, 46: 267-270.
- Holmberg, M.; Rosendal, T.; Engvall, E.O.; Ohlson, A. and Lindberg, A. (2015). Prevalence of thermophilic *Campylobacter* species in Swedish dogs and characterization of *C. jejuni* Isolates. *Acta Veterinaria Scandinavica*, 57 (1): 16-19.
- James, G.F. (2012). Enteric bacterial infections. In: Greene, C. (Eds). *Infectious Diseases of the Dog and Cat*. 4th Ed.; St. Louis, Missouri, Pp: 370-374.
- Jamshidi, A.; Bassami, M.H. and Farkhondeh, T. (2008). Isolation and identification *Campylobacter* Spp. And *Campylobacter Coli* from poultry Carcasses by conventional culture method and MPCH in Mashhad, Iran. *Iranian Journal of Veterinary Research*, 9 (2): 132-137.
- Lazou, T.; Houf, K.; Soultos, N.; Dovas, C. and Iossifidou, E. (2014). *Campylobacter* in small ruminants at slaughter: Prevalence, pulsotypes and antibiotic resistance. *International Journal of Food Microbiology*, 173 (3): 54-61.
- Lopez, C.M.; Giacoboni, G.; Agoustini, A.; Cornero, F.J.; Tellechea, T.M. and Trinidad, J.J. (2002). Thermophilic *campylobacters* in domestic animals in a defined population in Buenos Aires, Argentina. *Preventive Veterinary Medicine*, 55 (3): 193-200.
- Mahzoonieh, M.R.; Ghorbani, M. and Zahraie Salehi, T. (2013). Identification of *Campylobacter* species in feces of dogs and cats clinically healthy by M-PCR. *Journal of Comparative Pathobiology*, 10 (4): 1101-1106.
- Markey, B.; Leonard, F.; Archambault, M.; Cullinane, A. and Maguire, D. (2013). *Campylobacter*, *Arcobacter* and *Helicobacter* species. In: *Clinical Veterinary Microbiology*. Vol. 1. 2nd Eds, Pp: 335-343.
- Modolo, J.R.; Giuffrida, R. and Lopes, CAM. (2003). Antimicrobial susceptibility of 51 *Campylobacter* strains isolated from diarrheic and diarrhea-free dogs. *Arquivos Institute Biológico, São Paulo*, 70 (3): 283-286.
- Mohammadzadeh, A.M.; Hakimi, R.; Sharifi, Aram and Gorbani, M. (2012). A survey on *Campylobacter* infection in companion dogs by PCR. *Veterinary journal of Sanandaj Islamic Azad University*, 6: 25-30.
- Moser, I.; Riexneuwöhner, B.; Lentzsch, P.; Schwerk, P. and Wieler, L.H. (2001). Genomic heterogeneity and O-antigenic diversity of *Campylobacter upsaliensis* and *Campylobacter helveticus* strains isolated from dogs and cats in Germany. *Journal of Clinical Microbiology*, 39 (7): 2548-2557.
- Moyaert, H.; Ceelen, L.; Dewulf, J.; Haesebrouck, F. and Pasmans, F. (2008). PCR detection of *Campylobacter* species in feces from dogs. *Vlaams Diergeneeskundig Tijdschrift*, 78: 92-96.
- Polzler, T.; Stuger, H.P. and Lassnig, H. (2018). Prevalence of most common human pathogenic *Campylobacter* spp. in dogs and cats in Styria, Austria. *Veterinary Medicine and Science*, 4(2): 115-125.
- Rahimi, E.; Chakeri, A. and Esmizadeh, K. (2012). Prevalence of *campylobacter* species in fecal samples from cats and dogs in Iran. *Global Veterinaria*, 7: 365-369.
- Rodriguez, C.G.; Melo, R.T.; Fonseca, B.B.; Martins, P.A.; Ferreira, F.A.; Araújo, M.B.J. and Rossi, D.A. (2015). Occurrence and characterization of *Campylobacter* spp. isolates in dogs, cats and children. *Brazilian Journal of Veterinary Research*, 35 (4): 365-370.
- Salihu, M.D.; Magaji, A.A.; Abdulkadir, J.U. and Kolawale, A. (2010). Survey of thermophilic *Campylobacter* species in cats and dogs in north-western Nigeria. *Veterinary Italy*, 46 (4): 425-430.

- Sandberg, M.; Bergsj, B.; Hofshagen, M.; Skjerve, E. and Kruse, H. (2002). Risk factors for *Campylobacter* infection in Norwegian cats and dogs. *Preventive Veterinary Medicine*, 55 (4): 241-253.
- Selwet, M.; Cłapa, T.; Galbas, M.; Słomski, R. and Porzucek, F. (2015). The Prevalence of *Campylobacter* spp. and Occurrence of Virulence Genes Isolated from Dogs. *Polish Journal of Microbiology*, 64 (1): 73-76.
- Tsai, H.J.; Huang, H.C.; Lin, C.M.; Lien, Y.Y. and Chou, C.H. (2007). Salmonellae and Campylobacters in household and stray dogs in northern Taiwan. *Veterinary Research Community*, 31(8): 931-939.
- Vazirian, B.; Torkan, S. and Khamesipour, F. (2016). Isolation of *Campylobacter* species in feces of cats of Isfahan and Shahrekord. First national conference zoonosis, 1-2.
- Westgarth, C.; Pinchbeck, G.L.; Bradshaw, J.W.; Dawson, S.; Gaskell, R.M. and Christley, R.M. (2008). Dog-human and dog-dog interactions of 260 dog-owning households in a community in Cheshire. *Veterinary Record*, 162 (14): 436-442.
- Wieland, B.; Regula, G.; Danuser, J.; Wittwer, M.; Burnens, A.P.; Wassenaar, T.M. and Stark, K.D. (2005). *Campylobacter* spp. in dogs and cats in Switzerland: risk factor analysis and molecular characterization with AFLP. *Journal of Veterinary Medicine. B, Infectious Diseases and Veterinary Public Health*, 52 (4): 183-189.
- Yamazaki-Matsune, W.; Taguchi, M.; Seto, K.; Kawahara, R.; Kawatsu, K.; Kumeda, Y. et al. (2007). Development of a multiplex PCR assay for identification of *Campylobacter coli*, *Campylobacter fetus*, *Campylobacter hyointestinalis* subsp. *hyointestinalis*, *Campylobacter jejuni*, *Campylobacter lari* and *Campylobacter upsaliensis*. *Journal of Medical Microbiology*, 56 (11): 1467-1473.