



2013-05-21-041 Paratuberculosis databases updated (2013-05-16)

A special service of the OIE World Organization for Animal Health [Reference Laboratory for Paratuberculosis](#), Brno, Czech Republic to registered members of the Biomedical Technology, Epidemiology and Food Safety network. How to request [full papers](#) from PTB databases

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(04) Mycobacterial diseases; (12) Scientific Information, research and education; .  
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New publications in the [PARATUBERCULOSIS database](#) (1427-1431)

- 1427 Bradner, L. , Robbe-Austerman, S., Beitz, D.C. , Stabel, J.R.  
**Optimization of Hexadecylpyridinium Chloride Decontamination for Culture of Mycobacterium avium subsp paratuberculosis from Milk**  
Journal of Clinical Microbiology, (2013) 51, 1575-1577  
A protocol was optimized for the isolation of Mycobacterium avium subsp. paratuberculosis (MAP) from milk and colostrum, with parameters including chemical decontamination, antibiotics, and different culture media. This study demonstrates that the efficiency of MAP recovery from milk is highly dependent upon the culturing protocol, and such protocols should be optimized to ensure that low concentrations of MAP in milk can be detected.
- 1428 Yamasaki, E.M., Brito, M.F., Mota, R.A., McIntosh, D., Tokarnia, C.H.  
**Paratuberculosis in ruminants in Brasil: a review**  
Pesquisa Veterinaria Brasileira, (2013) 33, 127-140  
Paratuberculosis also known as Johne's disease, is a granulomatous enteritis caused by Mycobacterium avium subsp. paratuberculosis (MAP), an acid-fast bacillus that preferentially resides within host intestinal macrophages. The condition is most commonly seen in domestic ruminants, however MAP can also infect other mammalian species. Paratuberculosis shows a global distribution and is considered endemic in some regions. The World Organization for Animal Health (OIE, Office International des Epizooties), have classified paratuberculosis as a notifiable disease; considered to be of socio-economic and/or public-health importance, the control of which is necessary for the international trade of animal and animal products. The importance of paratuberculosis is related primarily to economic losses in the animal industry and also because of a potential role for this bacterium in the pathogenesis of Crohn's disease, a debilitating condition affecting the digestive tract of humans. In Brazil, paratuberculosis has been reported in a variety of ruminant species and shows a broad geographic distribution. The reported incidence of natural cases in Brazil has been limited, but it is believed that interspecific transmission of MAP and dissemination of the agent is driven by the commercialization of infected animals. The main objective of this paper was to collate the published epidemiological, clinic-pathological and diagnostic information in relation to paratuberculosis in cattle, buffaloes, goats and sheep in Brazil. Moreover, it served as a platform to emphasize the requirement to implement sanitary policies for control of MAP in the county, which may serve to improve the quality and value of animal products on international markets. PDF WILL NOT BE AVAILABLE.
- 1429 Franke-Whittle, I.H., Insam, H.  
**Treatment alternatives of slaughterhouse wastes, and their effect on the inactivation of different pathogens: A review**  
Critical Reviews in Microbiology, (2013) 39, 139-151  
Slaughterhouse wastes are a potential reservoir of bacterial, viral, prion and parasitic pathogens, capable of infecting both animals and humans. A quick, cost effective and safe disposal method is thus essential in order to reduce the risk of disease following animal slaughter. Different methods for the disposal of such wastes exist, including composting, anaerobic digestion (AD), alkaline hydrolysis (AH), rendering, incineration and burning. Composting is a disposal method that allows a recycling of the slaughterhouse waste nutrients back into the earth. The high fat and protein content of slaughterhouse wastes mean however, that such wastes are an excellent substrate for AD processes, resulting in both the disposal of wastes, a recycling of nutrients (soil amendment with sludge), and in methane production.



Concerns exist as to whether AD and composting processes can inactivate pathogens. In contrast, AH is capable of the inactivation of almost all known microorganisms. This review was conducted in order to compare three different methods of slaughterhouse waste disposal, as regards to their ability to inactivate various microbial pathogens. The intention was to investigate whether AD could be used for waste disposal (either alone, or in combination with another process) such that both energy can be obtained and potentially hazardous materials be disposed of.

1430 Nikonenko, B.V., Apt, A.S.

**Drug testing in mouse models of tuberculosis and nontuberculous mycobacterial infections**

Tuberculosis, (2013) 93, 285-290

Mice as a species are susceptible to tuberculosis infection while mouse inbred strains present wide spectrum of susceptibility/resistance to this infection. However, non-tuberculosis Mycobacterial infections usually cannot be modeled in mice of common inbred strains. Introduction of specific properties, such as gene mutations, recombinants, targeted gene knockouts significantly extended the use of mice to mimic human Mycobacterial infections, including non-tuberculosis ones. This review describes the available mouse models of tuberculosis and non-tuberculosis infections and drug therapy in these models. Mouse models of non-tuberculosis infections are significantly less developed than tuberculosis models, hampering the development of therapies. (C) 2013 Elsevier Ltd. All rights reserved.

1431 Lybeck, K.R., Lovoll, M., Johansen, T.B., Olsen, I., Storset, A.K., Valheim, M.

**Intestinal Strictures, Fibrous Adhesions and High Local Interleukin-10 Levels in Goats Infected Naturally with Mycobacterium avium subsp paratuberculosis**

Journal of Comparative Pathology, (2013) 148, 157-172

This study describes pathological findings and their association with the production of interferon (IFN)-gamma and interleukin (IL)-10 in goats infected naturally with Mycobacterium avium subsp. paratuberculosis (MAP). Twenty-seven goats were subjected to pathological examination. More than half of the animals had severe, diffuse, transmural granulomatous enteritis, often with abundant acid-fast bacilli (AFB), which was most evident in the proximal jejunum. Jejunal strictures and fibrous, peritoneal adhesions were findings that are not often reported in animals with paratuberculosis. Immunohistochemical labelling of IL-10 was seen within diffuse, granulomatous lesions and this may have prevented optimal local IFN-gamma production and exacerbated the disease. However, since IFN-gamma production was detected in cells from blood, jejunum and jejunal lymph nodes of goats with severe lesions by enzyme-linked immunosorbent assay, intracellular labelling and in-situ hybridization, the up-regulation of IL-10 might have been a consequence rather than a cause of the severe disease. The IL-10 labelling was co-localized with major histocompatibility complex (MHC) class II+ cells, but rarely with CD4(+) cells. Comparable numbers of CD4(+) and CD8(+) T cells were recruited to both severe, diffuse lesions and small to moderate granulomatous lesions, while few T cells expressing the gamma delta form of the T-cell receptor were associated with both types of lesions. (C) 2012 Elsevier Ltd. All rights reserved.

**New publications in the [CROHN'S DISEASE AND PARATUBERCULOSIS database](#) (805)**

805 Tigno-Aranjuez, J.T., Bai, X.D., Abbott, D.W.

**A Discrete Ubiquitin-Mediated Network Regulates the Strength of NOD2 Signaling**

Molecular and Cellular Biology, (2013) 33, 146-158

Dysregulation of NOD2 signaling is implicated in the pathology of various inflammatory diseases, including Crohn's disease, asthma, and sarcoidosis, making signaling proteins downstream of NOD2 potential therapeutic targets. Inhibitor-of-apoptosis (IAP) proteins, particularly cIAP1, are essential mediators of NOD2 signaling, and in this work, we describe a molecular mechanism for cIAP1's regulation in the NOD2 signaling pathway. While cIAP1 promotes RIP2's tyrosine phosphorylation and subsequent NOD2 signaling, this positive regulation is countered by another E3 ubiquitin ligase, ITCH, through direct ubiquitination of cIAP1. This ITCH-mediated ubiquitination leads to cIAP1's lysosomal degradation. Pharmacologic inhibition of cIAP1 expression in ITCH<sup>-/-</sup> macrophages attenuates heightened



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ITCH<sup>-/-</sup> macrophage muramyl dipeptide-induced responses. Transcriptome analysis, combined with pharmacologic inhibition of cIAP1, further defines specific pathways within the NOD2 signaling pathway that are targeted by cIAP1. This information provides genetic signatures that may be useful in repurposing cIAP1-targeted therapies to correct NOD2-hyperactive states and identifies a ubiquitin-regulated signaling network centered on ITCH and cIAP1 that controls the strength of NOD2 signaling.

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