MEGABACTERIA INFECTION IN BIRDS

By Dr. Colin Walker

Megabacteria are cigarette-shaped organisms about 20 times the size of most common bacteria, which live in the digestive tract of some birds. First identified in Australian budgerigars in the early 1990s, they have the potential to ulcerate the lining of the bird's Glandular Stomach. This leads to loss of blood and tissue fluid, predisposes the bird to secondary infection with other organisms and interferes with normal digestion. Initially, as the ulceration begins, the birds develop diarrhoea and become fluffed and quiet. As the disease progresses, the birds start to lose weight and as the ulcers deepen and start to bleed the birds become anaemic. This means they have trouble maintaining their normal blood pressure and, as a result, their feet become pale and cold to the touch. In severe outbreaks, 50% or more of the birds can die.

Megabacteria infection is diagnosed usually by microscopic examination of a bird's dropping. However, our understanding of the disease that Megabacteria causes has changed since the organism was first identified. What we used to believe was that if the organism was found in a bird's dropping, then this would be the cause of any digestive tract health problem it was experiencing and that the bird should be immediately treated. We now realise that this is not necessarily the case. We now know that although the organism can cause disease in its own right, it is more often a secondary agent, only becoming involved after some other disease or poor management practice has already weakened the birds, making them more vulnerable to disease generally.

Also, recent work at the University of Melbourne has shown that the organism is not a bacterium at all but rather a yeast and indeed the pattern of disease it causes is more typical of yeasts rather than many bacteria. As a result of this recent work, the organism has been renamed and now should be called by its correct name Avian Gastric Yeast. However, the term Megabacteria is so entrenched that its use is likely to persist.

It seems that Megabacteria are now fairly endemic in our Australian budgerigar flocks, with many young birds being passively exposed to the organism either directly from their parents or other birds or droppings in the aviary from a young age. With ongoing good care, fortunately in many cases this low-grade ongoing exposure does not cause disease but rather encourages the development of a natural immunity to the organism. Disease comes when birds are exposed to a level of organism to which the natural immunity they have developed is not strong enough to protect them.

Typically, because of these factors, disease is seen most commonly in the post-weaning time. Young birds have simply not been alive long enough to develop the strong natural immunity of the adult and yet are under multiple stresses that are inherent in the weaning process such as separation from their parents, establishing themselves in the new aviary, and learning to feed and water themselves. Superimposed on this, any other stresses such as overcrowding, low hygiene, poor nutrition or failure to provide good control of other diseases, in particular Coccidiosis, during this time sets the stage for a massive outbreak and particularly high losses.

Around the time the organism was first being identified, Dr Fillipich of Queensland University trialled an extensive range of antimicrobial agents to see which were effective against Megabacteria. He found only one, an antiyeast/antifungal drug called Amphotericin B. In Australia, this is available under several brand names. There used to be a Squibb product called Fungilin, which contained Amphotericin B as a thick orange syrup. Birds would not drink this

but it was useful in crop tubing individual birds. Unfortunately, Squibb no longer manufacture this product. Vetafarm, an Australian company based in Wagga, produces a water-soluble yellow Amphotericin B-based powder called Megabac S. This is not always available but at the time of writing can be purchased through their web site. Being water soluble, it is useful where large numbers of birds need to be treated. Squibb also produces Amphotericin B in tablets, called Fungilin lozenges. Although designed for human use, they can be adapted for use in birds under veterinary advice. Usually a tablet is crushed into 6 ml of water and 0.25 ml of this solution is given to sick birds daily. The tablet is not easy to dissolve, however, it eventually forms a yellow suspension that will flow through a crop needle. Alternatively, one tablet can be dissolved into 80 ml of water and provided ad lib to unwell birds. The usual suggested treatment time is at least 10 days. Do, however, remember that budgies are not obligate drinkers. Unlike other birds, such as pigeons, which will rush to a drinker if deprived of water for only a few hours, budgies can go without water for 20 days and still look basically normal on the perch. This means that just because medicated water is in front of them, there is no guarantee that they are getting the drug.

Another group of therapeutic agents which may help in managing Megabacteria, which initially might seem a little bit strange, are the acids. Stress disrupts the normal bowel bacteria, in the process interfering with their lactic acid production. This lactic acid keeps the pH of the healthy bird's bowel on the weakly acidic side, in the process helping to protect it from disease. With stress, this innate protective mechanism can be lost. It is thought that by lowering (ie acidifying) gastric pH, an intestinal and stomach environment is created that not only makes it difficult for Megabacteria to establish in uninfected birds but also makes it difficult for Megabacteria to multiply in birds that are already infected. Usually, either citric acid (a white crystalline powder) at a dose of 1 teaspoon (3 g) to 4.5 – 6 litres or apple cider vinegar (acetic acid) 5 – 10 ml to 1 litre, are used. Being natural nutrients, at the above doses, there is no risk of a toxic reaction and so they can be used fairly freely. Their use also helps ensure that droppings passed build up an acidic dressing in the aviary, helping to inhibit Megabacterial survival in the environment.

Probiotics are also thought to be of use through promoting healthy generally and by helping lower digestive tract pH through the production of lactic acid.

So, what should you do if your veterinarian tells you that your birds have Megabacteria? The correct answer depends on whether the birds are unwell and if so, how many are affected. Being a stress-based disease, only part of the answer involves the use of medication.
If all of the birds appear clinically normal, the appropriate thing to do is simply provide ongoing good care. With ongoing good management practices and the maintenance of a good aviary environment, the organism is unlikely to cause disease and the low-grade ongoing exposure is likely to strengthen the birds developing immunity.

If small numbers of birds occasionally become unwell (and the majority of aviaries fit into this group), a three-point plan is followed:

1. Megabacteria exposure to further birds is reduced by separation of the unwell birds and a super thorough clean of the aviary. Unwell birds are treated with Amphotericin B (usually Fungilin lozenge solution, 0.25 ml daily for at least 10 days via crop tube). There may also benefit in treating severely unwell birds with a broad-spectrum antibiotic to control any secondary bacterial infection. Baytril 0.5 drop twice daily per bird is a good choice.
2. Aviary management and environment are reviewed to identify any predisposing stresses that may have triggered the outbreak. To be thorough, this should involve a veterinary health profile to screen for any other concurrent health problems.

3. Ongoing good care is provided so that the majority of birds are best placed to resist the disease. Acids or probiotics can be placed in the water, mixed freshly each day, until a period without new birds becoming unwell occurs.

If large numbers of birds become unwell, then the same basic procedure is followed. It may no longer however be practical to crop tube individual unwell birds with Amphotericin B, and so water-based medications containing Amphotericin B (Fungilin lozenge or Megabac S) may need to be used. In aviaries with severe ongoing problems, the regular use of acids or probiotics, eg 2 days per week, may decrease the chance of severe disease outbreaks.

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The Clinic is a bird only veterinary clinic located in the eastern suburbs of Melbourne. Established in 1982 the clinic operates to serve Australian bird fanciers. Each day phone calls and samples are received from aviculturalists around Australia and avian products are mailed out as required.

Bird fanciers can call on the bird-only number **(03)9800 5311** for free veterinary advise. Droppings, bird for autopsy and other samples can be sent by post to the clinic for analysis. Results are usually available the day samples are received.

The clinic carries a full range of veterinary products for canker, respiratory infection, coccidiosis, probiotics, electrolytes and wormers in addition to vitamin and mineral supplements. Mail orders can be placed by ringing our 1300 number, **1300 132 038** for the price of a local call. Mail orders received before 4pm are dispatched that day. Orders can be sent either by normal or express post. If sent by express they reach most areas of Australia the next day. A $2.00 discount is given to all fanciers paying with a credit card.