Avian Gastric Yeast (aka Megabacteria): Should You Be Worried?

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Veterinary students, aviculturalists, and pet bird owners all have one thing in common, they always have to be worried about something. The question that I want to address here is whether bird owners should be worried about megabacteria? The comments that I am about to make are based on my experience and knowledge of the literature. Many things have been said about this organism and diseases associated with it, but as of yet, there is little good experimental data to support many of those claims.

The first question that we need to answer is what is this organism anyway? Work in my laboratory by Dr Elizabeth Tomaszewski has shown that it is a type of fungus, a yeast. This is in agreement with work that has also been done in Germany. Therefore, I will refer to this organism as the **avian gastric yeast (AGY)** for the rest of this article. Our work contrasts with previous work that suggested that this organism was a bacteria. It is my opinion that scientists that have reported that they have grown this organism using traditional bacterial isolation methods have grown bacteria that live in the ventriculus, but have not grown the AGY itself. Because AGY is a fungus, it will only be expected to respond to specific drugs that are effective against fungi.

The AGY has been identified in many species of birds, but it is particularly common in budgerigars, some species of finches, and it is the general impression that it commonly infects parrotlets. From our research and based on conversations with aviculturalists and veterinarians, there is a suggestion that this organism may commonly infect the green-naped parrotlet and may be more likely to cause disease in parrotlets that have been bred for colour mutations. Rumours abound and one rumour is that there is more than one AGY and that some are more likely to cause disease than others. This point is totally speculative and our data at this time, do not support this hypothesis.

Does AGY cause disease? Does it cause disease in all birds that it infects or just some? Although, I personally have rarely seen birds that I thought had disease caused by the AGY, work in Australia, Europe and reports from veterinarians here in the United States' suggest that it does cause disease in some infected birds. In the budgerigar, the disease most commonly associated with AGY is termed “going light.” These are typically older birds and they typically have a long course of disease characterised by weight loss and regurgitation. Birds with this disease will have large numbers of the AGY in their droppings and when treated with an appropriate drug will become clinically better and the AGY will no longer be found in the droppings. It is important to note that other diseases, including trichomoniasis, can also cause these same signs in budgerigars. In other species of birds, AGY has been associated with a chronic wasting disease, but regurgitation has not been reported to me, at least, as a common sign. These birds also shed large numbers of organisms and signs resolve with treatment.

The AGY, however, does not cause disease in all infected birds. Currently I have a research flock of budgerigars. At one time or another, most of these birds have shed AGY. Yet, none of these birds show any signs of disease that could be related to this organism. I have made similar observations in other budgerigar collections. So I am going to go out on a limb and tell you that I think that most budgerigars infected with AGY are just fine and healthy and that only a small percentage of infected birds actually develop AGY-associated disease.

Diagnosis of AGY infection is not always easy. AGY does not stain well with the Gram stain or quick stains. It is readily observed in a slurry made of a dropping and saline, but not all infected birds shed the organism in sufficient concentrations so that it can be detected with one or more samples and other organisms in the faeces may be mistaken for AGY.

The final questions about AGY revolve around treatment. Can we treat this organism in the sick bird and expect improvement? What about flock treatment? Does it make sense to be treating entire collections of birds? The best information on this topic is from Dr Lucio Filippich at the University of Queensland, Australia. Dr Filippich has shown that AGY can be treated with amphotericin B and that sick birds get better with treatment. However, at least in budgerigar collections, treatment is not 100 per cent affective and some birds remain infected and presumably will re-infect the others after treatment has ended. Our work has also supported this. We have used two different preparations of amphotericin and found that in two weeks, many birds will become negative, but low levels of infection will persist in other birds. Four weeks of treatment, however, showed a complete cure in one of our studies. Another drug that we have studied, fluconazole, was effective against the organism in most birds, but did not eliminate it from all birds treated.

At this point in time, my conclusions about the avian gastric yeast are the following. Infection with AGY is very common in some species of birds, but disease is rare. No treatment trials, except 30 day treatment with amphotericin, have resulted in the elimination of AGY from a flock of birds. Individual birds showing signs of illness may respond to treatment. In my opinion treating sick birds makes sense. However, treating entire flocks of birds that do not show signs of disease does not make sense because I do not think it can be eliminated from an entire flock and we may cause the organism to become resistant to the drug we are using. Should a bird be eliminated because it is found to have this organism in its droppings? I would say no. If you are sure that none of your other birds have this infection. then don't bring it into your collection. But if you have a nice healthy fat and cheery parrotlet or budgerigar with small numbers of organisms in the droppings, I do not consider this to be a problem. I am sure that other veterinarians may disagree with me and I may change my opinion as we learn more about this organism, but for now, this is what I think.

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