

## RESPIRATORY DISEASE IN RATS

Respiratory disease is a very common problem in rats with several different causes and contributing factors. Nutritional status, environment and exposure to certain viruses and bacteria (some even before they are born) all contribute to the disease severity and progression. For many rats cure is not possible but early, aggressive intervention gives you the best chance of ridding them of disease. For the majority of rats the disease will be lifelong but careful management can prolong life and more importantly, improve their quality of life.

The majority of infections are a combination of viruses and bacteria. The most common ones are:

### *Mycoplasma Pulmonis*

- Most common cause of respiratory disease
- Transmitted across placenta before birth, at birth or aerosol
- Lifelong infection
- Signs can range from mild to severe respiratory distress, head tilt, red (porphyrin) staining around eyes and nose and weight loss

### Sendai Virus

- Very contagious
- Spread via direct contact or aerosol
- Does not cause serious disease on its own

### Cilia Associated Respiratory (CAR) Bacillus

- Attaches to respiratory cells
- Disease worsened by infection with *M.pulmonis* or Sendai virus
- Lung abscesses, weight loss, difficulty breathing, porphyrin staining

### *Streptococcus Pneumonia*

- Gram positive bacteria
- Possible cross infection between humans and rats
- Affects younger rats more seriously

- Often present with nasal discharge, head tilt, circling, difficulty breathing, pneumonia

#### Corona Virus (sialodacryoadenitis virus)

- Very contagious
- Spread via direct contact and aerosol
- Signs range from mild to severe swelling of the salivary glands, corneal lesions, red (porphyrin) staining around eyes and conjunctivitis.

Environmental factors and diet also play a critical role. The accumulation of waste material in the cage (especially urine) leads to high levels of ammonia in the air they breathe. This damages the lining of the respiratory tract and predisposes the rat to disease. Daily cleaning of the cage is important to reduce this risk. Ventilation is also important to avoid damage to the respiratory tract which is why glass tanks are not suitable habitats for rats. Bedding is also important. Dusty bedding such as wood chips, shavings or sawdust are not suitable. Bedding based on paper or cardboard such as Carefresh are recommended.

Diets low in vitamins A and E predispose rats to respiratory disease and in general a diet deficient in any vitamin or mineral can contribute to poor immunological function and poor health. Commercial muesli mixes can lead to selective feeding – this is where the rat takes out their favourite bits from the bowl each day and essentially eats an unbalanced diet composed of only their favourite parts. This can be avoided by offering pelleted foods where each component looks the same.

#### **Diagnosis**

Diagnosis of respiratory disease is usually made on clinical examination and history. Radiographs may be useful to help understand the severity of the problem but are not always necessary.

#### **Treatment**

Often the exact causative agent(s) are not known as this would involve taking samples from the rat's respiratory tract and sending them off to a specialist laboratory which due to their small size can be difficult. Treatment usually centres around the use of combinations of several different types of drugs such as:

- Antibiotics may be given to treat the bacterial infections. Direct oral administration is required often for several weeks (in water medication is not effective). Antibiotics are not effective against viruses.
- Anti-inflammatories are often given to help reduce the inflammation associated with the infection.
- Mucolytics help break up some of the discharge in the respiratory tract to help the rat expel it and aid breathing
- Bronchodilators help open up the airways.

Drugs can be administered orally or by nebulisation (a special piece of equipment creates a fog which is then breathed in by the rat).

Despite our best efforts at treatment, improving ventilation, improving diet and changing the bedding material, most rats will go on to have chronic respiratory problems, but despite this can often be still be managed to have a happy otherwise healthy life.