

## **Winn Feline Foundation Progress Report**

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*The Pulmonary Distribution of a Nebulized Radiopharmaceutical in Awake Cats*

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Feline asthma is a very common cause of respiratory disease. It has been estimated that 1% or more of the general cat population suffers from this disease. The disease can range from mild with intermittent signs, to very severe with life-threatening consequences. Therapy for feline asthma has traditionally been based on oral bronchodilators and corticosteroids, as well as injectable corticosteroids. These medications sometimes have serious systemic side effects. In addition, some owners find it quite difficult to administer several pills a day to their cat. This results in inadequate dosing of medication and poor control of the asthma.

However, many people who suffer from asthma take their medications in an inhaled form. The ability to use inhalers in cats instead of oral or injectable medications would reduce the risk of side effects, improve disease control, and provide a quick method to give medication to acutely and seriously ill cats in an emergency. It has been proposed that cats may also be able to inhale their asthma medications and a system has been designed using a facemask and Flovent<sup>®</sup> (Glaxo Wellcome) and Ventolin<sup>®</sup> (Glaxo Wellcome) inhalers with a spacer (i.e. AeroChamber<sup>®</sup>, Boehringer Ingelheim). No study has yet verified the efficacy of these facemask and inhaler systems in cats, so we do not know if cats truly receive the inhaled dose of the medication in the lungs as desired.

This project was designed to analyze the efficacy of aerosolized medications by using a radiopharmaceutical to document delivery of the medication to the lungs. It was also designed to examine how well awake cats will tolerate having medication administered via a facemask.

Twenty privately owned adult cats were used for the study. The cats were determined to be healthy by screening their medical history and performing basic diagnostics, such as a physical examination, complete blood count, biochemical profile and chest x-rays. A harmless radiopharmaceutical was nebulized and administered to the cats via a facemask. The mask was held on each cat's face for a total of 10 breaths. A gamma camera was used to capture images of the radiopharmaceutical as it was breathed into the lungs. The cats did not require any sedation or anesthesia for the procedure.

By examining the images from the gamma camera, it was evident that in all 20 cats, the radiopharmaceutical had reached the lower airways. This is what is desired when inhaled medications are used to treat asthma. All cats tolerated the facemask readily. The study supports the possibility of using inhaled medications for cats with feline asthma.

Individual inhalant medications used for treatment of asthma will now need to be examined to determine their efficacy in cats.