

## Evergreen Avian & Exotic Animal Hospital

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### Insulinoma (Islet Cell Disease) in Ferrets

-Cathy A. Johnson-Delaney, DVM

Disease of the islet cells that make insulin is commonly called “Insulinoma” to denote that the changes are neoplastic (cancer). The islet cells of the pancreas are responsible for making insulin. In the ferret, too much insulin is being made and does not respond to the normal feedback system that controls blood glucose. As a result the ferret experiences hypoglycemia (low blood glucose). The islet cells essentially become a tumor that does not respond to the normal feedback. Islet cells throughout the pancreas can be affected, and spread can be up the bile duct and into the liver and also to other tissues including the duodenum. In many cases the tumors are nodules and can surgically be removed if found, but tumors can also be so small that they can't be found, although they are still functional and secreting insulin.

**Signs** of islet cell disease include all the signs of low blood sugar: glassy eyed look, hypersalivation and pawing at the mouth, shaking, tremor, collapse, cold or sweaty paws, vocalization, gagging and/or going unconscious or comatose. The severity of the symptoms may range depending on how fast the blood glucose has dropped. In some instances there seems to be acute pain in the area of the pancreas or the pyloric area of the stomach and duodenum.

**Diagnosis** is made by timed feeding, then blood draw for blood glucose and insulin level. A single low blood glucose on an in-house meter may be suggestive of hypoglycemia and insulinoma, but it is not definitive unless the exact time from eating is known, and if accompanies elevated insulin levels. Tentative diagnosis is made by response to treatment to elevate blood glucose.

**Treatment** is aimed at ameliorating the signs of hyperinsulinemia (high insulin) and hypoglycemia (low blood sugar). This is the acute (episodic) treatment: fluids with dextrose, dextrose on gums, corticosteroids and in some instances a pain killer. The ferret may be placed on a corticosteroid daily to elevate glucose, and/or another drug called diazoxide which also raises blood glucose. To address the islet cell tumors themselves, surgery often is the best option. For ferrets that are not good candidates for surgery, a chemotherapeutic agent (doxorubicin) has been used to kill of cancer cells. In all cases it is advantageous to have the ferret eat its regular food frequently (at least every 4 hours) and to be sure the ferret needs a meal before starting a playtime. The condition must be managed as it is progressive. Owners are taught how to watch for signs and begin immediate treatment at home.