



Nu-Tech Research Project

The Australian Pig Poison: Euthanasia Holy Grail or another Hollow Promise?

Background

Exit began collecting data of the available and cheap common inorganic salt sodium nitrite (NaNO_2) when it was first announced in Australia in 2006 that it formed the basis of a new *humane* lethal agent that could be used to control the rapidly expanding feral pig populations in North Australia. Its use as a pig toxicant was patented by Australian researchers Brendan Cowled et al in 2008.¹

Research into nitrite was prompted in Australia with the withdrawal and banning of two feral pig toxicants (warfarin and yellow phosphorous) due to legitimate animal welfare concerns. The product marketed as 'Hog-Gone' has had successful trials in Australia and has recently been introduced into North America for pig control.²



Sodium Nitrite as feral pig toxin 'Hoggone' & 'Pigout'

Toxicology

Sodium nitrite offers a number of features that make it an ideal human euthanasia agent. It is cheap, unrestricted, easy to store and take as a drink and breaks down readily in the environment. Its mode of action is the reversible oxidation of blood haemoglobin to methemoglobin, making it incapable of transporting oxygen. The loss of oxygen to the brain leads cerebral anoxia and death. Nitrite toxicosis through methemoglobinemia has been assessed as 'humane'.

Normally the level of methemoglobin in red blood cells is kept at a low level by the enzyme methemoglobin reductase that reduces the methemoglobin back to haemoglobin. For the ingestion of nitrite to lead to death the amount taken and the absorption into the blood stream must be at such a rate that the reductase enzyme is overwhelmed, and the haemoglobin level kept low till death occurs.



Current situation

The collapse of the Chinese pentobarbital market in 2017 has prompted a re-examination of nitrite.

Clearly availability and legality are attractive characteristics. Simple storage and administration are also desirable properties, as is the ability to significantly increase the toxic properties of the salt by simple (available) supplements.

Concerns persist though about adverse symptoms and reliability. The use of nitrite in pig populations has been explained by the low level of methemoglobin reductase in pigs. This enzyme level is higher in humans making them (theoretically) less susceptible.

It is also noted that there is available treatment that can reverse nitrite methemoglobinemia.

In Summary

The jury is still out about the future potential of this simple salt as a back-up, or even possible replacement of the gold standard euthanasia drug, sodium pentobarbital.

The NuTech Research Project

Exit is actively collecting reports on the use of nitrite, both in the medical literature and as anecdotes. We hope to have this collated and summarised in time for a more definitive presentation at NuTech Cape Town. To this end we invite all those supportive of NuTech goals to forward any information they have on the use and future of this ubiquitous salt.

Exit is providing the necessary funds for this research.

Perhaps this Holy Grail has been sitting under our noses for years!

For more information, or to contribute to the NuTech nitrite research project, contact:

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1. Cowled, B.D., S.J. Lapidge, S. Humphrys and L. Staples. 2008b. Nitrite salts as poisons in baits for omnivores. International patent WO/2008/104028.

2. <http://www.kwtx.com/content/news/Potentially-potent-feral-hog-poison-bait-to-be-field-tested-in-Texas-466653583.html>

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