COMPANION ANIMALS

Pharmacology of Succinylcholine

Succinylcholine (SCh) is a neuromuscular blocking agent whose muscle relaxant action can lead ultimately to death from hypoxia induced by peripheral respiratory paralysis. Succinylcholine chloride, also known as Anectine, Quelicin Chloride, Scholine Chloride, Sucostrin Chloride and U-Tha-Sol, has been used as a method of euthanasia for pets and racehorses suffering on-track breakdowns. Because the action of the drug has virtually no effect on the central nervous system, injected animals remain conscious though paralyzed, and they are unable to exhibit signs of pain or distress.

A recent report in JAVMA (176: 646-647, 1980) on the clinical pharmacology of succinylcholine states that the only proper use of the drug is as an assisting muscle relaxer to facilitate surgical manipulations. “Succinylcholine has no sedative, narcotic or analgesic properties. Therefore, it should not be used as an anesthetic agent or as a restraint agent for surgical procedures in nonanesthetized patients. Its use for euthanasia is strongly condemned. Because SCh depresses respiratory muscle function at all clinically useful doses, its use should be restricted to mechanically ventilated patients. Succinylcholine is a useful, safe anesthetic adjunct for inducing muscle relaxation in anesthetized mechanically ventilated patients.”

USDA Licenses Vaccine for Canine Parvovirus

A vaccine has been licensed by the U.S. Department of Agriculture (USDA) for the prevention of a canine disease that has recently broken out in New York City and along the Eastern seaboard. 

Dellen Laboratories of Omaha, Nebraska, was issued the first license on February 6, 1980 to produce and distribute a vaccine for canine parvovirus.

According to Pierre Chaloux, Deputy Administrator of the USDA’s Animal and Plant Health Inspection Service (APHIS), parvovirus infections in dogs are usually characterized by severe diarrhea and dehydration, loss of appetite, vomiting, high temperature, and low leukocyte count.

Canine parvovirus is contagious and usually spreads quickly in dog colonies, kennels, and in situations where dog-to-dog contact is prevalent. The virus is often transmitted by ingestion of dog feces and is believed to be a mutant form of the virus responsible for feline panleukopenia.

The infection, which was unknown until the latter part of 1978, has been reported in all areas of the U.S., and also in Australia and the U.K.

LABORATORY ANIMALS

Exercise Cage for Rhesus Monkeys

Monkeys are highly social animals, but standard laboratory cages do not take this into account—usually because of lack of funds and space. In Switzerland, Dr. J. Jaekel at Ciba-Geigy has developed a ‘play’ cage in which groups of monkeys are allowed to exercise for a certain period every day. Recently, an article appeared in Laboratory Primate Newsletter 19(1):3-5, 1980 describing the development of an exercise cage at Alabama’s Auburn University and the author’s experience with the device.

The cage at Auburn is 2.1 x 2.7 x 2.1 meters in size. A mobile wall is constructed on one side opposite a guillotine door and entrance runway so that recalcitrant animals can be forced to leave if necessary. However, the animals can be trained to exit with only minimal prompting. The exercise cage was used on a daily basis with a group of ten rhesus monkeys, and a majority of the animals were trained to exit without recourse to the mobile wall (Dr. Jaeckel had a similar experience in his facility). With sufficient assistance, each animal could be allowed at least an hour in the cage, five days a week, and compatible monkeys could be exercised together.

CKC Moves to Ban Laboratory Breeders

A recent decision by the Canadian Kennel Club (CKC) to pass a by-law amendment prohibiting membership to any person, party or company supplying animals for experimental purposes is encountering strong opposition from the biomedic research and teaching community. The Canadian Veterinary Medical Association and the deans of the Canadian veterinary colleges have expressed support for a protest of the amendment, which is awaiting ratification by the Minister of Agriculture. In the United States, the National Society for Medical Research (NSMR) has voiced its fear to Canadian authorities that “if this travesty [the CKC proposal] were allowed to be adopted, it could have a serious and undesirable impact internationally on biomedical research” (NSMR Bulletin 31:3, 1980).

According to an editorial in Dogs in Canada (71:5, 1980), the move to ban breeders and sellers of laboratory dogs from the CKC was motivated by “a deep love and respect for dogs.” The editorial also states that although animal experimentation can be expected to be tolerated and even supported by society in general until suitable alternatives are found, dog breeders, “whose lives are dedicated to the betterment and protection of those creatures they are responsible for bringing into this life,” cannot condone the involvement of fellow breeders in supplying dogs for research.

The use of pure-bred dogs for biomedical experimentation has tra-
ditionally been defended on the 
grounds that in contrast to random 
source animals, animals of standard 
genotype and known medical history 
makes better research subjects. A ma-
jor pitfall in animal experimentation 
is the presence of pathogenic organ-
isms in laboratory animal colonies, 
which leads to outbreaks of disease 
and subsequent severe financial losses. However, subclinical diseases, 
commonly found in random source 
animals, can be much more insidious, 
sometimes contributing to incorrect 
interpretation of experimental results 

Although dogs bred for the 
laboratory are initially much more 
expensive than dogs obtained from 
pounds, the latter may have lower 
overall survival rates after surgical pro-
cedures, necessitating the use of more 
animals. Dr. Michael Festing (Labora-
tory Animals Centre, UK) has illus-
trated this problem by referring to an 
American study in which 93% of lab-
oratory-bred Labradors survived 
experimental open heart surgery com-
pared to 73% of healthy ‘condi-

Researchers appreciate the long-
term scientific and economic benefits 
of using pure-bred animals, but they 
by no means form a united front against the use of random source ani-
imals, particularly in the case of acute 
nonsurvival studies, where death may 
occur under less stressful conditions 
than it would in a pound. Thus, when 
a measure was passed on 22 April 
1980 by the Connecticut State Senate 
prohibiting the sale, disposition and 
use of impounded dogs for medical 
research, it was a decision made in 
spite of the claims of researchers that 
their work would suffer if pound 
animals became unavailable. Public 
pressure, in the form of letters (one 
senate member received over 600), petitions 
and telephone calls, exerted a great 
deal of influence on the legislature. 
In New York last June, similar action 
led to the repeal of the Metcalf-Hatch 
Act, which required taxpayer-sup-
ported shelters to supply state labora-
tories and medical schools with 
animals for experimental purposes.

FARM ANIMALS

Battery Hen Welfare

According to a report in Feed-
staffs (April 7, 1980, p. 19), entomolo-
gist R.D. Hall (University of Missouri) 
presented the following observations 
at the Midwest Poultry Federation’s 
anual convention: The Northern foul-
mite, Ornithonyssus sylviarum, is a 
common external parasite infecting 
cage-housed layer hens and has a sig-
ificant impact on their productivity 
and welfare. Dr. Hall emphasized that 
the battery cage method of hus-
bandy tends to intensify this problem 
because a) de-beaking reduces preen-
ing substantially; b) cage confine-
ment of hens eliminates dustbathing 
opportunities; and c) although sus-
ceptibility to mites varies among indi-
vidual hens according to breed, birds 
selected for cage environments are 
more susceptible than others.

Hall went on to point out that 
the indiscriminate use of acaricides 
may result in excessive residues in 
eggs and meat and health hazards to 
industry workers.

Intensive Livestock Production: 
“Costs Exceed Benefits”

A number of arguments to sup-
port the thesis that the costs to society 
of intensive animal production ex-
ceed the benefits have been present-
ed by P.G.C. Dunn (Vet Rec 106:6, 
1980). Particular concerns include 
overstocking to increase productivity 
with market-price fluctuations, 
greater disease incidence and need 
for drugs and loss of rural animal 
and its replacement with energy-consum-
ing machinery. Dunn also states: “By 
tolerating such practices [of ‘factory’ 
animals] we support a system of 
animal agriculture which is immoral,” 
and that “Society is paying heavily 
for it in terms of unemployment, 
animal welfare, drug abuse, envi-
ronmental pollution, etc. It is time that 
we looked at the structure as a whole 
and stopped applying sticking plas-
ters to the cracks appearing on the 
surface.” He concludes that while 
one cannot blame the individual 
farmer or veterinarian for these devel-
opments, the system can only be 
changed by collective action such as 
the government laying down firm 
guidelines as to what are acceptable 
husbandry practices and also provid-
ing a “farm labor subsidy” which 
would allow farmers to utilize human 
labor and enable them to adjust grad-
ually to more appropriate systems of 
livestock production.

Abstract: Jewish Attitude Toward Slaughter

The relationship of man to ani-
mal in Jewish literature is discussed in 
this paper. A person may kill an ani-
mal for food consumption, but 
whether such killing is a necessary 
evil or a good thing in itself remains 
open. All the laws of Jewish religion are pushed aside if human life is in danger, with only 
three exceptions. The taking of an 
animal’s life involves responsibility 
Killing animals for human needs is 
allowed according to Jewish law. This 
covers the acquisition of other prod-
ucts from the animal, as well as animal 
experimentation. On the other hand, 
causing pain to the animal for play or 
sport, (hunting, etc.) is not permitted.

Many Jewish laws are described 
which were formulated only to save 
animal’s life from cruelty. People should 
behave in as humane a manner toward 
their animals as possible.

There are many restrictions in 
the Jewish religion concerning meat 
consumption. If these restrictions 
were not intended to prevent man 
from using the animal for food, then 
they show man that an animal is a liv-
ning being, and taking its life in order 
to feed man should not be done with-
out thinking about it—[M. Levinger. 
(Abtract reprinted from Anim Regul 
Stud 2:103-109, 1979]

Abstract: Influence of Kosher Slaugh-
ter on Blood Supply and Nervous 
System

Schachita, the Jewish method of 
slaughtering animals for food, must 
be carried out on a living and healthy 
animal. During schachita the soft 
parts of the neck, including trachea, 
oesophagus, carotid arteries and 
jugular veins are severed. The spinal 
cord and its circulation remain intact. 

The main blood supply to the 
brain comes through the internal 
maxillary artery. During ligation of the 
vertebraid artery and the vertebral one 
permits the blood flow through the 
vertebraid arteries into the carotid and 
thus the blood reaches the brain. If both 
vertebraid and occipital arteries are 
ligated the brain receives no arterial 
blood supply, and the animal dies.

Immediately after shechita 
both blood masses are checked, and 
no blood flow can be measured in the 
internal maxillary artery. Therefore no 
arterial blood reaches the brain at 
that time. The pressure in the brain 
drops much more rapidly than in the 
maxillary artery, due to the venous 
outflow which is not replaced by 
tario blood supply. This fact causes an 
acute shock in the slaughtered 
animal. 

The functioning of the brain is 
very rapidly reduced, for immediately 
after the cut the electroencephalo-
graphic recording loses its character-
istic form.

The perception of pain is greatly 
reduced by a clean cut and by the 
distraction of the animal. It is very 
difficult to determine exactly the 
perception of animal. One of
countries in the Far East and Europe indicate the scale of the illegal trade.

Although many countries have introduced legislation concerning the ivory trade, several major consumer countries still fail to enforce it and thus keep the market open. Work by the IUCN/SSC Elephant Group has shown that the ivory trade has been an important factor in the decline of elephant populations in many parts of Africa. It is suggested that effective control of the trade could provide a valuable source of revenue for many developing African countries—S. M. Wells and J. A. Burton. (Abstract reprinted from *Anim Regul Stud* 275-91, 1979.)

**Environmental Hazards Posed by Exotic Fish**

"Released by accident, ignorance, or well-meant efforts to solve environmental problems and develop new game fish," exotic fish have become a major source of biological pollution, according to a Department of Interior (DOI) news release dated 7 April 1980. A recent survey contracted by the U.S. Fish and Wildlife Service’s National Fishery Research Laboratory (Gainesville, FL) reveals that 84 exotic fish species have been found in U.S. waters. Of these, 39 species have established breeding populations, with eight showing rapid or major expansion over the past six years. Only one species, the European brown trout, is considered by the U.S. Fish and Wildlife Service to represent a beneficial introduction by virtue of its popularity with U.S. game fishermen.

Although the Service acknowledged the survey’s warning that “some foreign fishes are cause for serious concern,” the agency plans to pursue a policy of “intensive research” on the harmful effects of imports on U.S. water systems rather than stopping further introduction of exotics. Some wildlife biologists view the execution of this policy as a monumental, if not impossible task, maintaining that even the most thorough scientific studies cannot adequately predict the response of a foreign species to a new environment.

One example of the long-term problems associated with introducing nonindigenous fish is the case of the common carp, imported in the early 1800’s by a Nevada game commissioner and stocked in the state’s local streams. The carp, unencumbered by its native predators, acclimated quickly and began spawning and feeding in the surrounding streams and lakes to the detriment of indigenous fish and vegetation. Compensation was not forthcoming on any level as the carp did not prove popular for eating (it had been touted as a superb tasting fish), or for sport. According to Dr. George Laycock, author of *Alien Animals*, “…the carp is so entrenched that even today there is little hope of eradicating it, despite continuing research management efforts.” Indeed, the U.S. government spends millions annually in attempts to keep the carp under control.

More recently, the grass carp was introduced from the Orient into several states by federal, state and private agencies on an experimental basis for aquatic vegetation control. The grass carp is now present in at least 34 states, and the DOI notes, “…this effective forager is established in the central Mississippi River area and may have a severe impact on migratory waterfowl and/or the river’s commercial fisheries that rely on wetland vegetation.” Dr. Laycock reports that as late as 1978, the Ohio Division of Wildlife was experimenting with a new variety of grass carp to see if it could be used for hatchery ponds of the algae that choke them in the summer months. Nine years earlier, at a Conference on Exotic Fishes and Related Problems held in Washington, DC by the Sport Fisheries Institute and sponsored by the American Society of Ichthyologists and Herpetologists, professionals pleaded for serious research on the grass carp prior to any additional stocking.

Aquarium species are also becoming a priority concern. In 1979 alone, the U.S. imported 130 million fish, primarily aquarium specimens for the pet trade. Among these are piranhas, the small carnivores that have been known on occasion to attack live-stock and humans. At present, there are no established piranha populations in U.S. waters. However, released "pets" have been found in Michigan, Ohio, Pennsylvania and Florida, where a gravid female red-bellied piranha appeared last spring in a Boca Raton swimming hole. The DOI mentions that it is against most state laws to dump exotic species into open waters, but goes on to say that “…some misguided owners do so rather than destroy their pets.”

In 1965 or 1966, the walking catfish, a native of Southeast Asia, escaped from an aquarium fish farm in Florida where it was being held as brood stock. Now, it is considered one of the most harmful introductions in North America. This airbreathing fish ‘walks’ over land on its pectoral fins to invade new river systems, sometimes stopping traffic as hoards wriggle across highways. It has a voracious appetite and competes with natives like the largemouth bass and bluegill in freshwater communities.”

The Gainesville survey offers a substantial amount of data to support a causal connection between the introduction of foreign fish and critical, sometimes nearly uncontrollable environmental hazards. As Dr James A. McCann, Director of the National Fishery Research Laboratory, stated: "[New foreign fish species] may prey on native fish, compete for food, hybridize, carry new diseases and alter the natural environment so that native species cannot thrive. Some species pose a direct danger to humans."