FBS AND ANIMAL WELFARE

Serum suppliers and users, in no way, need to “feel bad” about harvesting and using FBS. There is no more of an ethical problem with “killing bovine fetuses” than with “killing adult animals”. Actually, if the size of the “ethical problem” is defined as the level of pain suffered by animals when slaughtered, it is much less a problem with the bovine fetuses.

The fetus remains inside the unopened uterus for 15-20 minutes after the mother cow is killed, where it dies from oxygen depletion. It shows no vital signs when the fetal blood is being collected.

The occasional protests from animal activists and politicians in relation to the harvest of FBS, is due to lack of information about the operational reality, combined with a lack of information about why pregnant animals are slaughtered in the first place.

No cow is slaughtered to satisfy the demand for FBS; cows are killed for the meat; and the fetal blood is a by-product of the meat industry.

The reasons for killing pregnant cows include:

**In countries with intensive meat - and dairy farming operations**
1. Deficient health condition of pregnant animals, making slaughtering the only alternative to writing-off the cow as waste.
2. Erroneous reading of gestation examination; mistakenly classifying some pregnant cows as ready for replacement.
3. Adverse economic circumstances, in commodity markets or for individuals, forcing liquidation of entire farms.

**In extensive cattle farming operations, e.g. in Australia and South America;**
1. Steers and heifers are grasping together: Some pregnancies are unavoidable.
2. Adverse economic circumstances can force liquidation of entire farm operations
3. Under non-technified conditions in some countries, heifers are made pregnant to gain weight before selling for slaughter.

As mentioned: The cows are killed for the meat; and the fetuses are a by-product.

From an ethical perspective, it is clearly preferable to use whatever can be obtained from the fetus, rather than letting it go to waste.

For the harvest and use FBS or other animal serum, the ethical considerations are similar to those related to the consumption of meat.

In reality, the collection of blood for serum can be argued to be at a higher ethical level, than the slaughter animals for meat products.

The use of cell culture and FBS as a growth media have eliminated the need for using live animals in many areas of medical research and the production of vaccines, a great contribution to animal welfare.

SERUM SAVES LIFE

American Veterinary Medical Association

**S3.2.2.6 Dams and Fetuses**
Prerequisites for the sensation of pain, distress, or pleasurable experiences are sentience and consciousness. Both are necessary for animals to experience either positive or negative states. Behavioral and EEG evidence indicates that mammalian fetuses are insentient and unconscious throughout the first 75% to 80% of gestation. As neuronal pathways between the cerebral cortex and thalamus become better established, the fetus develops the capacity for sentience. However, while maintained within the protected environment of the animal’s uterus it remains in an unconscious state due to the presence of eight or more neuroinhibitors that act on the cerebral cortex of the fetus to maintain it in the sleep-like state of unconsciousness. At birth, the combined effects of reduced neuroinhibition and onset of neuroactivation contribute to gradual arousal of the mammalian
newborn into a state of consciousness that occurs within minutes to several hours after birth. These observations indicate that the fetus does not suffer as if drowning in amniotic fluid when the dam is euthanized; nor is it likely to experience pain associated with other types of invasive procedures in utero. These studies also support the rationale for international guidelines on the handling of fetuses suggesting that fetuses should not be removed from the uterus before the EEG is most likely to be isoelectric. For example, when animals are euthanized by physical methods that include exsanguination, delaying removal of the fetus from the uterus for a minimum of 5 minutes after hemorrhaging has ceased generally assures a substantial amount of anoxia-induced damage to the cerebral cortex that will normally prevent progression toward a return to sensibility. If there is any doubt as to the fetus’s level of consciousness, it should be euthanized immediately by captive bolt and adjunctive methods as appropriate. The unconscious state of the fetus also addresses the welfare concerns of those who fear that the collection of tissues (in particular, fetal calf blood by intracardiac puncture) from live fetuses in the immediate postslaughter period creates undue suffering. Although the heart may continue to beat (which is necessary for the successful collection of fetal blood), in the absence of breathing there is little likelihood of return to a state of consciousness. These are by no means insignificant concerns as there is high demand for fetal tissues to support laboratory research. A 2002 report suggests that world demand for fetal calf serum was 500,000 L/y and growing, a need that would require the harvest of at least 1,000,000 fetuses/y. The information derived from these observations also has application for fetal rescue situations that may involve euthanasia of late-term pregnant dams by physical methods. The reason why one might attempt this is to avoid remains disposal complications from drug residues as would occur if the fetus were to be delivered by caesarian section using standard surgical methods. Although respiration is interrupted, the heart continues to beat in animals rendered unconscious using physical methods. Therefore, it may be possible to rescue a fetus from an unconscious dam by caesarian section if the procedure can be performed before the fetus suffers irreversible effects of anoxia. Once the fetus is successfully delivered, euthanasia of the dam may be confirmed via any of the previously described adjunctive methods. It is important to understand that there are significant risks to fetal welfare if rescue is attempted. Welfare complications associated with fetal rescue attempts would include impaired brain function caused by anoxia occurring during the rescue attempt, compromised respiratory function and body heat production resulting from fetal immaturity, and greater risk of infection as a consequence of failure of passive transfer of immunity. When the value of the fetus justifies the effort to secure a successful live delivery, the preferred approach to assure fetal health and welfare is by caesarian section using standard surgical procedures. Barbitaluates and barbituric acid derivatives—Pentobarbital readily crosses the placenta resulting in fetal depression in pregnant animals. However, death of the dam normally precedes the death of the fetus. In one study cardiac arrest in lambs was delayed for as long as 25 minutes beyond the death of the dam. Similar observations in mice demonstrated that death of the fetuses could only be achieved by the use of doses well in excess of those normally required for euthanasia. Based on these observations, one could offer a similar recommendation to that provided previously for death by exsanguination whereby fetuses should be retained within the uterus for at least 15 to 20 minutes after maternal death has occurred to prevent the delivery of viable fetuses.

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### Article 7.5.5.

**Management of foetuses during slaughter of pregnant animals**

Under normal circumstances, pregnant animals that would be in the final 10% of their gestation period at the planned time of unloading at the slaughterhouse should be neither transported nor slaughtered. If such an event occurs, an animal handler should ensure that females are handled separately, and the specific procedures described below are applied. In all cases, the welfare of foetuses and dams during slaughter should be safeguarded.

Foetuses should not be removed from the uterus sooner than 5 minutes after the maternal neck or chest cut, to ensure absence of consciousness. A foetal heartbeat will usually still be present and foetal movements may occur at this stage, but these are only a cause for concern if the exposed foetus successfully breathes air.

If a live mature foetus is removed from the uterus, it should be prevented from inflating its lungs and breathing air (e.g. by clamping the trachea).

When uterine, placental or foetal tissues, including foetal blood, are not to be collected as part of the post-slaughter processing of pregnant animals, all foetuses should be left inside the unopened uterus until they are dead. When uterine, placental or foetal tissues are to be collected, where practical, foetuses should not be removed from the uterus until at least 15–20 minutes after the maternal neck or chest cut.

If there is any doubt about consciousness, the foetus should be killed with a captive bolt of appropriate size or a blow to the head with a suitable blunt instrument.

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