REVISTA *ARGUMENTUM*

BRAZILIAN ANIMAL TESTING CRIMES AND ALTERNARTIVES

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ABSTRACT

Animal experimentation has increasingly taken part of the debates in society, including academia, exposing the need to respond to moral and legal issues that arise when evaluating justifications for the use of animals as mere tools. This article intends to briefly appreciate this practice in light of current legislation, observing the subject, covering Federal Constitution, Law n. 9605/98 (Environmental Crimes Law), Law n. 11,208 / 2008 (Arouca Law) and Decree n. 6899/2009, as well as seeking to anticipate the effects of Bill n. 6602/2013. To assist in this verification, it also observes what say defenders of animal experimentation and the vision of those who are opposed to this practice, while evaluating the issue of alternatives to animal use.
KEYWORDS: Animal law; Environmental crimes; Bioethics; Animal cruelty.

RESUMO

A experimentação animal cada vez mais vem fazendo parte dos debates na sociedade, incluindo o meio acadêmico, expondo a necessidade de responder a questões morais e jurídicas que surgem ao avaliarem-se as justificativas para o uso dos animais como meros instrumentos. Este artigo se propõe a apreciar brevemente esta prática à luz do ordenamento jurídico vigente e para isso observa conjuntamente o tema, abarcando Constituição Federal, Lei n. 9.605/98 (Lei de Crimes Ambientais), Lei n. 11.208/2008 (Lei Arouca) e o Decreto n. 6.899/2009, procurando ainda antecipar os efeitos do Projeto de Lei n. 6602/2013. Para auxiliar nesta verificação, observa também o que dizem os defensores da experimentação

animal e qual a visão dos que se opõem a esta prática, avaliando ainda o tema das alternativas ao uso de animais.
PALAVRAS-CHAVE: Direito animal; Crimes ambientais; Bioética; Crueldade contra os animais.

INTRODUCTION

> The attitude of the dominant culture in animals is very similar to the attitude towards women described by Simone de Beauvoir in "The Second Sex" (1983). Non-human animals are the 'other'. They are different from other humans are not humans, things, non-things, or simply, nothing. **Tom Regan**[1]

In June 2004 I was invited to be a member of the Council of Ethics on Animal testing (CEUA) at the Bahia State Federal University (UFBA) School of Veterinary Medicine as a representative of the legal community. At that time, I was writing my doctoral thesis on Animal Rights, so I immediately accepted the invitation, believing that I could contribute to a change in attitude and mentality in the use of animals in scientific research at that school. I was even happier to find a philosophy lecturer also on the board and I thought he could support my arguments toward abolition of animal experimentation.

After a couple of meetings discussing the statute of the council, on the third meeting Professor Eliomar Pereira do Socorro was elected president and I was elected vice president, which made me even more confident in changing attitudes. I thought I could convince my fellow professors to create a pioneering center of alternative resources to animal research in northeastern Brazil. I had not been fully aware of the role that an ethics board plays in animal research. I somehow still believed that some animal experiments were really necessary. In fact I was not really an abolitionist. The first meetings were lively and interesting, and I debated without causing any uneasiness among those present. Over time, however, it become clear to me that my dialogue was causing discomfort.

[1]Tom Regan. Progress without Pain: The Argument for Humane Treatment of Animals Research. **Saint Louis University Law Journal**. Vol. 31, p. 195th (our translation)

Once I asked the philosophy professor which philosopher he was a disciple of and he replied that he had specialized in Emanuel Kant's doctrine. Another time the chairman told me she was a vivisectionist and at that time she was performing testing on animals using a procedure which was to insert a probe into the digestive tract of a dog aiming to improve the quality of commercial food for pets.

Professor Eliomar Socorro was transferred to the University of Brasília (UNB) and as vice president I had to assume the presidency of the council. However, I was never invited to further meetings. Legally I resigned.

Anyway, from that time it became clear to me that the animalist movement was divided into three mainstreams with irreconcilable ideas: welferists, which allow the use of animals in experiments as long as they are humanely treated, secondly: abolitionists, who fight for complete elimination of animal exploitation as it violates legal and ethical principles, and thirdly: new welfarists, who fight for slight changes in the present waiting for future abolition.

This essay will attempt to show that the utilitarian cost-benefit approach to animal experimentation, especially those experiments conducted on healthy animals by academic researchers, is a crime under the article 32, VI of the Criminal Environmental Act. of 1998.

1. IS THE VIVISECTION CRUCIAL TO MODERN SOCIETY?

> I represent a classic example of what I chose to call ' conditioned ethical blindness '.My entire life had consisted of being rewarded for using animals, treating them as sources of human improvement or amusement. There had not been a single person with the temerity to challenge my behavior towards other animals. Of course I was kind to animals; of course I loved my pets; of course I would tend to a sick bird, rabbit, dog or cat without question. On the other hand, I would belie my tenderness a moment later by eating a chicken, or a rabbit or a squirrel, or part of a steer. That was different in my mind; that was ' meat '. The word 'meat' is a means of distancing ourselves from the animals we eat, just as ' negative reinforcement 'is a means of distancing ourselves from electrically shocking a creature who feels pain as much as, if not more than, we humans do. **Donald Barnes**[2]

Although it has been practiced since ancient times, the vivisection of animals in scientific research only developed an institutionalized procedure from the ideas of Claude Bernard who in the nineteenth century conducted a series of studies on the effects of a spine piercing the chest and severing nerves and arteries of animals. By publishing his book (*An Introduction to*

[2]Donald J. Barnes. A Matter of Change. In: Peter Singer. **In Defense of Animals**. New York: Basil Blackwell.1985. p. 160.(our translation)

the Study of Experimental Medicine) in 1865, Bernard established the methodological basis of animal experiments, reinforcing the idea that this kind of research can only be valid if it allows control of all variables. Thus, the research may be reproduced in other laboratories, so that changing a variable or a set of variables allows for comparisons with results achieved in other research. [3]

Depending on the field of studies, various species are used in scientific research. Mice, for example, are widely used in studies of biochemistry, endocrinology, reproductive physiology, oncology, genetics, immunology, dentistry, geriatric and behavioral research. Rabbits are preferred in chemical research, immunology, ophthalmology and speech therapy. Pigs are used in the area of nutrition, heart and skin transplantation, while fish are used in studies of liver cancer, diabetes, immunology, ophthalmology and cardiology. Dogs are used in cardiac studies, gastro (diabetes) and speech therapy.[4]

Nevertheless, we must emphasize that not every procedure that uses animals as a model should be considered an experiment for an experiment is performed when the result is not previously known. The inoculation of the venom of certain animals within the blood of horses for serum or vaccines, for example, is a procedure that uses animal, however, it is not an experiment. Moreover, not all experiments using animals are synonymous with vivisection, for example an injury that is intentionally inflicted on the body of a healthy individual to study the development of diseases, the effects of new medicines or treatment, and psychological behaviors. Primates are usually used in the last stages of the development of new treatments, especially in studies of immunology, such as Polio, and blood compatibility.[5]

There is a consensus in the academic world that every time a new vaccine or drug is developed it is necessary that they be tested on animals previously to avoid risk to human life. According to Cohen, a lethal disease like malaria kills approximately three million, mostly Asian and African children a year. He says we need to decide the lives we put at risk: either we perform animal testing or new drugs and vaccines will not be available in the market.[6].[7]

[3] Tamara Bauab Levai. **Víctims of science**. Campos do Jordão: Mantiqueira, 2001. p. 26.

[4] See Michael Fox. **Inhumane Society:** The American Way of Exploiting Animals. New York: St. Martin' s Press.1990.

[5]According to Marjorie Spiegel. **The Dreaded Comparison**: Human and Animal Slavery. New York: Mirror Books, 1996. p.65: vivisection means alive dissection, term used to define experiments conducted on living creatures - human or not human- causing them burns, freezing, non-surgical therapies, induction of disease or intentional damage, but also psychological experiments, test drugs etc.

[6]Carl Cohen. **The animal rights debate**. Maryland: Rowman and Littlefield, 2001. p. 11-12.

[7] Ibid. p. 11-12.

Some argue that unlike the food, entertainment or fashion industries, animal testing is crucial to modern society because most current medicine would not be possible without this kind of research. Surgical techniques such as open heart surgery, coronary bypasses and organ transplants were developed from research carried out in dogs. Therefore ethically to consider animal testing an unacceptable activity would be a dangerous step backwards for humans and animals themselves, who will continue to suffer from diseases such as cancer, diabetes and degenerative cardiovascular diseases[8].

Between 1880 and 1885, for example, Pasteur and his colleagues injected fragments of the brain tissue of dogs infected by the rabies virus in healthy dogs through trephination, and after repeating this procedure on other animals, they finally inoculated the virus in healthy dogs, guinea pigs and rabbits, which were immunized[9]

Vivisectionists believe that our duty to animals is just a duty to society because causing unnecessary suffering or injury to animals is an offense to civilized life.[10] According to Carl Cohen, an ardent defender of experiments, the resounding success of the first polio vaccine announced by the Medical Center of the University of Michigan had a big impact because from then on thousands of children were saved from death and misery. This great step for medicine, he says, would have never been possible without the use of animals. According to Cohen animal tissue is vital for the preparation of the culture to manufacture the vaccine, and the primates used in this process played an important role because initially some research was carried out in healthy children who had just been contaminated. [11]

In fact the cause of this disease was unknown until 1908 when scientists were able to transmit the virus to monkeys, and only after several years of experiments with animals was it possible to grow the virus in cultures of human cells, making the development of the vaccine possible in 1950. To ensure the safety and efficacy of this vaccine, scientists had to perform several tests on primates. At that time to produce it in large quantities, it was necessary to use the

[8]Ibid. p. 11-12.
[9] Ibid. p. 11-12.
[10]R Robert J. Ritchie. Why Animals Do Not Have Tights. In: **Animal Rights and Human Obligations**. Tom Regan and Peter Singer (Ed.) New Jersey: Preatice-Hall. 1976, p.183.

[11] Carl Cohen. **The animal rights debate**. Maryland: Rowman and Littlefield, 2001. p. 11-12.

kidney tissues of primates, nowadays however, this vaccine is produced by the alternative method of self-propagation of cells.[12]

Scientists argue that the biomedical industry's concern about the suffering and emotional well-being of animals is an anthropomorphic attitude that does not take into account the natural order of life on earth, where living beings exist to serve other living beings. They argue that just as plants need to use microorganisms for nutrients, herbivores feed on plants, carnivores feed on herbivores. As nature has not imposed any restrictions on species, preventing them from exploiting each other, so man has a natural right to exploit animals.[13]

According to vivisectionists, even when man, considered the only species capable of developing an abstract concept such as "ethics" argues for laboratory animals to be treated humanely, he is defending his own dignity, not that of animals.[14] For vivisectionists, the use of animals in scientific procedures is the only effective form of exploitation with potential benefit to humanity at a low ethical charging a too low ethical price. All the information obtained in experiments using animal models may be used by future generations, as occurred with the polio vaccine which was developed in 1950 and today frees many people from its terrible consequences[15].

Moreover, vivisectionists argue that "disinterested " knowledge is an absolute cultural value, which does not allow limitations at the risk of violating the constitutional principle of freedom of science. They also argue that there is a real obsession among animal defenders in relation to vivisection, claiming that 97.5% of animal deaths are for the food and leather industry, 2.1% for the control of animal borne diseases and only 0.4% for animal testing. What is more, 90 to 95% of animals used in animal testing are rats and mice, and only 2% are dogs, cats and primates, not counting the number of animals killed in these procedures which is much lower than in the control of animal borne diseases. [16]

The chimpanzee, for example, is the only animal that scientists were able to infect with the HIV virus which does not develop into an HIV related disease. This has led many laboratories

[12]According to Carl Cohen. **The animal rights debate**. Maryland: Rowman and Littlefield, 2001. p. 11-12, several other victories of medicine, such as the eradication of tuberculosis and typhus, the discovery of insulin for diabetics and antibiotics and the development of anesthesia, were also from the use of animals as guinea pigs.

[13] Michael Fox. **Inhumane Society:** The American Way of Exploiting Animals. New York: St. Martin' s Press.1990, pg.59.

[14]Richard Simmonds. Animal Experimentation is Ethical. ROHR, Janelle (Ed.). **Animal Rights**: opposing viewpoints. San Diego: Greenhaven Press, 1989. p. 51-52.

[15]Ibid. p.51-52.

[16] Kathleen Marquardt, Herbert M. Levine; Mark Lartochelle. **Animal Scam**: the beastly abuse of human rights. Washington: Regnery Gateway, 1993. p.39.

to try to develop a vaccine for this virus using chimpanzees. Vivisectionists usually refer to this as if it were a moral dilemma, where any choice would imply a breach of a binding moral principle, like choosing between the salvation of a terminally ill patient or an animal in a laboratory. Jean Bernard, former president of the *French Committee for Ethics in Science* and the *French Academy of Sciences*, reports that once when he was taking part in a television show, a listener asked Brigitte Bardot, a well-known activist in animal defense, what her decision would be if she had to choose between the life of a child who could only be saved at the expense of the death of a dog undergoing an experiment. After hesitating for a long time, she said that "it would be preferable to let the dog die".[17]

For Claude Bernard "if we can use animals in household service and even kill them to eat their meat, it makes no sense to prohibit their use for the development of a more useful science for humanity".[18]

In the field of psychiatry and psychology some research causes physical and emotional damage in animals. For example in cases of "comprehensive learning," using repeated electrical shocks and other types of trauma, such as maternal, social, food, water or sleep deprivation, to induce depressive states in monkeys for instance. In other experiments, animals are subjected to trephination of the skull or having parts of their brain removed. Often the skull of the animal is sectioned for the introduction of electrodes in the brain to monitor the artificial nerve stimulation in tests of drug, stimulants, sedatives, antidepressants and tranquilizers.[19]

Scientists claim that from these studies, key information about the learning process are obtained, and therapies developed which are still used to treat diseases as diabetes, obesity, alzheimer, Parkinson, cancer, arthritis and typhus.[20]

2. IS ANIMALS TESTING ETHICALLY JUSTIFIABLE?

> I presume there is no man of feeling, that has any idea of Justice, but would confess upon the principles of reason and common sense, that if he were to be put to unnecessary pain by another man, injustice is his own case, now that He is the sufferer, he must naturally infer, that if he were to put another man of feeling to the same unnecessary and

[17] Jean Bernard. ***Da biologia à ética***. São Paulo: Editorial Psy II, 1994. p.143.
[18] Claude Bernard. **An Introduction to the study of experimental medicine.** Michigan: Coller Books. 1961.
[19] Tamara Bauab Levai. **Vítimas da ciência**. Campos do Jordão: Mantiqueira, 2001. p. 31.
[20] See Carl Cohen. **The animal rights debate**. Maryland: Rowman and Littlefield, 2001.

> unmerited pain which He now suffers, the injustice in himself to the other would be exactly the same as the injustice in his tormentor to Him. Therefore the man of feeling and justice will not put another man to unmerit pain, because he will not do that to another, which he is unwilling should be done to himself. **Humphrey Primatt**[21]

The question is, however, controversial and many argue that the use of animals for testing therapies in drug use control is completely ineffective because reactions are very different in humans and animals. For them, many drugs that were tested successfully in animals may cause harm to men, whereas in other cases, the ones that would be beneficial to men are being discarded because they have been harmful to laboratory animals.[22]

It is important to emphasize that many drugs have been developed from clinical studies alone e.g. anti-depressive and antipsychotics drugs, which makes the use of animals in drug development even more questionable. Furthermore, due to the artificial conditions in which this research is performed, the animals do not exhibit the same symptoms of human depression such as insomnia, loss of appetite, guilt, suicidal thoughts or behavior. The best way to understand human behavior is therefore perhaps to monitor and study people with mental and behavioral disorders.

In dental research, animals are often forced to ingest large quantities of sugar or have bacteria introduced in the mouth to acquire cavities and other diseases and then have their dental arches removed for study. This is because a new dental treatment can produce undesirable results for patients, so vivisectionists argue that they should be tested on animals before being applied to humans. They say that animal testing also serves to train the researcher and improve his or her techniques to be aware of the risks involved in surgery, for example.

As seen above, the vast majority of procedures using animals as a model to investigate processes of natural phenomena that do not bring any application for the benefit of men, because it is always problematic to extrapolate the results of experiments on animals to humans. [23]

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[21], Humphry. Primatt. Revindiction on the Duty of Mercy and the sin of cruelty to brute animals (1776) In: Paul Clarke and Andrew Lindzey. **Political Theory and Animal Rights.** London: Pluto Press.1990, p. 124

[22]Peggy Carlson. Whose Health is It, Anyway? **The Animals 'Agenda**. November/December.1996. p. 19.

[23]According to Gary L. Francione, **Introduction to animal rights**: your child or the dog? Philadelphia: Temple University. 2000, p. 35: "In addition to the revenues generated by the sale of animals to laboratories, rivers of capital flow into industries that manufacture cages and others supplies necessary to house the millions of animals involved, and hundreds of millions of federal tax dollars are provided annually as grants to vivisections. Animal research is big business."

To have an idea of how these surveys are conducted, two articles published in the *Journal of Periodontology*, the official journal of the American Academy of Periodontics, will be analyzed. The first article is entitled *Nicotine Effects on Alveolar Bone Changes Induced by Occlusal Trauma: a Histometric*. *Study in Rats* As the article says, the animals (thirty adult rats, weighing from 300 to 400 grams each) were kept in individual plastic pens with access to plenty of water and food in quarantine for 5 days at a temperature of 22 ° to 24 ° C, exposed to a cycle of 12-hours of light, 12-hours of darkness before the experiment.

The conclusion of the experiment was as follows: "These results support the hypothesis that nicotine can increase bone loss associated with periodontal occlusive overload. However, this hypothesis could not be confirmed in this study"[24]. In another article entitled *Effect of Estrogen and Calcitonin Therapies on Bone Density in a Lateral Area Adjacent to Implants placed in the Tibia of Ovariectomized Rats*, the authors report an experiment to put a titanium screw bilaterally in a group of 58 rats, divided into three groups, which were administered with Calcitonin and estradiol. After 60 days, the animals were killed and the areas which were not calcified were removed, and blood samples were taken to measure levels of alkalinity and calcium fosfase at the time of death.

The bone density of 500 mm from the mineralized lateral zone to the implant was measured and the researchers reached the following conclusion: Apparently, the estrogen therapy can prevent the negative influence of endogenous estrogen deficiency in bone density around the titanium implant placed in ovariectomized rats[25].

The terrible *Draise Test*, developed in the decade of 40 for U.S. FDA (*Food and Drug Administration*) by J. H. Draize, can be of two types: eye (*Draize Eye Test*) and skin (*Draize Skin Test)*. The first test is to evaluate the ocular and periocular changes and the degree of irritability caused by certain cosmetic and cleaning products on the market. It is performed as follows: a group of six to nine albino rabbits are trapped in a structure that keeps their heads immobilized. They are administered 100 mg of a concentrated solution of a substance in their eye orbit without anesthesia. The animal remains in this state for a certain time, when the eye

[24] Getúlio R. and other. Nogueira Filho, Nicotine Effects on Alveolar Bone Changes Induced by Occlusal Trauma: A Histometric Study in Rats. **Journal of Priodontology**, March 2004 (Volume 75, No. 3) : "These results support the hypothesis that nicotine may enhance periodontal bone loss associated with occlusal overload. However, this hypothesis cannot be validated with the present study"

[25]Poliana Mendes Duarte et al, Effect of Estrogen and Calcitonin Therapies on Bone Density in a Lateral Area Adjacent to Implants Placed in the Tibiae of Ovariectomized Rats. **Journal of Priodontology,** November 2003 (Volume 74, No. 11: "It appears that estrogen therapy may prevent the negative influence of endogenous estrogen deficiency on bone density around titanium implants placed in ovariectomized rats."

of the animal, which has turned into an inflamed, painful, ulcerated, hemorrhagic and blind mass, is extracted and anatomically and physiologically analyzed. [26]

However, basic anatomical differences between rabbits and men in relation to the eyelid make this test of dubious validity. The research comparing the eye accidents caused by 14 household products and cosmetics found differences in the order of 18 to 250 % between human and rabbit eyes. [27] In other words, the two species react quite differently. The cutaneous *Draize* test, in turn, seeks to identify the degree of irritability on the skin caused by certain substances. The procedure begins with the hair removal from parts of the animals' bodies, usually rabbits, rodents and pigs, then the product to be tested is applied leaving the animal exposed to this substance which often causes stiffening of the skin, ulceration and the formation of edema in the location.[28]

Many are critical of the scientific value of these tests, considering the differences between the constitutions and epidermal immunological reactions between humans and rabbits, as these reactions are very different between species. Furthermore, there are already far more efficient alternative methods such as those using in vitro culture of epidermal cells.

In the spring of May 1980, Henry Spira was headed to Revlon's store, a cosmetics giant, located on Fifth Avenue in Manhattan with a truck full of rabbits and three hundred demonstrators dressed up as rabbits to protest against the Draize tests that the industry used to test their products. He was already negotiating with Revlon for the company to contribute financially to the development of an alternative test that did not not use animals, but the company had ignored his proposals. Spira managed to gather a dozen animal protection associations, which funded a full-page protest in several newspapers, including *The New York Times*, posing the following question: "How many rabbits does Revlon need to blind in the name of beauty". This ultimately brought public opinion to his side.[29]

The protests continued until in December when Revlon capitulated, announcing the allocation of $750,000 to Rockefeller University to develop an alternative test and they were followed by other companies such as Avon and Bristol-Myers. All *Draize* tests performed on animals were abolished in 1987. Thanks to the movement initiated by Spira there are now more than

[26] Heidi Welch, **Animal testing and consumer products.** Washington DC: Inverter responsibility Research Center. 1990.
[27] Heidi Welch, **Animal testing and consumer products.** Washington DC: Inverter responsibility Research Center. 1990.
[28] See Sidney Gendin. The Use of Animals in Science. In: Animal Sacrifices: Religious Perscpectives on the Use of Animals in Science. Tample University press, 1986. p.22
[29] Henry Spira. Fighting to Win, in: In Defense of Animals. Edited by Peter Singer. NY, 1985. p.194.

60 alternative methods available, including Eytex and Matrex and those using corneas from dead animals or humans, as wel as corneal cells cultured *in vitro.*[30]

In 1991 the State of California passed a law that banned eye tests, including the *Draize* test, but this law was vetoed by Governor Pete Wilson, as happened in the state of Maryland in 1990. The LD50 test, much criticized by toxicologists, was introduced in 1927 to determine the quantity of drugs, chemicals or cosmetics, required to kill 50% of 60 to 100 animals that are used in the procedure. The test is usually performed in rats, rabbits, cats, dogs, goats and monkeys through the forced ingestion of the substance being tested, either by force-feeding, subcutaneous, intravenous, intraperitoneal exposure, inhalation, mixed with food and by rectal or vaginal application. [31]

A maximum dose of the substance is initially given which is gradually reduced until the animal shows convulsions, dyspnea, ulcers, weight loss, abnormal posture, and epistaxis, bleeding from the eye and oral mucosa, pulmonary, renal and liver lesions, coma, even death. The test only ends when 50% of animals die, and from this, scientists believe they have found the ideal amount for prescription in humans. Accordig to Zbinden different countries use different LD50 values for similar hazard categories proving their lack of real scientific merit.[32]

Many scientists believe that the simple transposition of these test results to humans is inefficient as even among animals, the procedure depends on variables such as age, sex, weight, temperature, time of year and method of administration of the substance. Consequently different laboratories have often obtained different results for the same substance. Furthermore, the data cannot be used for the treatment of victims of poisoning because the quantity of the substance ingested is usually unknown.[33]

Nevertheless, the proponents of this type of test argue that only 4 to 10 rats or mice are currently used per experiment, which has considerably reduced the number of deaths. For them, this test is still very important to determine the lethal dose for new drugs used in treatments such as cancer and AIDS and to find appropriate treatment in cases of accidental poisoning or overdose.[34]

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[30] Id.
[31] Id, p.41
[32] Heidi J. Welsh. Animal Testing and Consumer Products.1990. p.51
[33] See Peter Singer. Animal Liberation. New York. 2002. p.56.
[34] According to Kathleen Marquardt; Herbert Levine and Mark Larochelle. **Animal scam**: the beastly abuse of human rights. Washington: Regnery Gateway, 1993. p. 44: "Even Alan M. Goldberg, director of the Johns Hopkins Center for Alternatives to Animal Testing (CAAT), agrees: 'I cannot recommend that the industry cease animal testing immediately. Until no animal tests are prevent to be at least as effective as animal tests – and they have not yet – companies must continue to use animal tests to fulfill their moral and legal obligations to insure the safety of their products ' "

The issue remains controversial, according to Marquardt, even when a substance seems harmless in animal testing, it must be subjected to medical procedures with human volunteers, thus only 5% of products tested in vitro are tested on animals, and even then, 98% of them are interrupted at this stage and are never tested on humans. The prohibition of tests in humans can lead to tragedies like that of Thalidomide.[35]

Although different countries use different parameters for the LD50, the numerical character of this test makes it a convenient way to classify chemicals, even considering that this classification is questionable. That is because the regulatory agencies fear that the use of a new measurement of scientific analysis of hazardous products used as a criterion for classification, can make the legal basis uncertain, triggering a struggle for the reclassification of products, increasing the level of uncertainty in the consumer market.[36]

In 1998, PETA developed a major campaign against General Motors who had been using animals in their experiments, especially in studies of head trauma in traffic accidents. In the past doctors believed little could be done in such cases, but through research with animals, aggressive medical procedures for the recovery of victims of such accidents became possible. According to the advocates of animal testing, automobile animal testing has made possible the development of seat belts, air bags, energy-absorbing steering wheel columns and self-alignment of the wheel and tire and reducing the effects the diesel fumes and other fluids in the respiratory system and the control of the potential toxicity of new materials used in the manufacture of automobiles.[37]

In the arms industry animals are burned, shot, bled and subjected to chemical, biological, nuclear weapons or intense noise. Indeed, in a military experiment to study hearing loss in 1983 in *Aberdeen Proving Ground*, researchers trapped 38 cats in canvas bags, and then fired several shots with rifles and machine guns, producing up to 165 decibels of noise. Within two months, the cats were killed and their hearing organs were removed for histological analysis. In 1989 the experiment was repeated with 51 cats, and according to Doctor J. Will Wright, it was concluded that hearing damage occurred in animals. We know that from 110 dB, the human ear begins to suffer losses, and that cats and people have different hearing thresholds

[35] Kathleen Marquardt; Herbert Levine and Mark Larochelle. **Animal scam**: the beastly abuse of human rights. Washington: Regnery Gateway, 1993, p. 46.
[36] Heidi Welch.**Animal testing and consumer products.** Washington DC: Inverter responsibility Research Center, 1990. p.51.
[37] Kathleen Marquardt; Herbert Levine and Mark Larochelle. **Animal scam**: the beastly abuse of human rights. Washington: Regnery Gateway, 1993. p.42-43.

as cats can hear sounds of a frequency up to a thousand times greater than humans, making the results of this study rather questionable.[38]

John Bachman, for example, a retired U.S. Air Force officer, who carried out radiation experiments on animals at an air base in Texas for over ten years, said that "the current research, as well as that made in the past is useless".[39]

Another example is that of Donald Barnes, formerly in charge of the experiments at the Primates Balance Platform at Brooks Air Force Base - where about a thousand monkeys were subjected to radiation – who, after quitting the post, became an opponent of experimentation on animals.[40]

Moreover, these military experiments with animals can lead to disasters like what happened in 1979 in the Ural Mountains in Russia, when the Soviets were trying to manufacture biological weapons and caused a major anthrax epidemic in an accident which was not recognized by the government of President Boris Yeltsin until 14 years later. It is estimated that between 50 and 150 million animals are used each year in scientific and industrial procedures around the world, causing terrible suffering and deprivation. Vivisectionists argue that carrying out such experiments, even when the results are already known, is an educational technique education which is still valid in many scientific fields such as mathematics, physics and chemistry, as it allows the student to verify if the procedure is being done correctly, or not.[41]

They argue that the animals used in experiments have a fast metabolism for the development of certain diseases, using them therefore allows the research to be completed in a period of time compatible with the academic calendar.They also argue that ethics committees do not usually approve inconsistent projects and institutions do not fund redundant or unnecessary experiments, estimating that only 1% of these experiments are carried out in primates, emphasizing also that the contributions resulting from these procedures are very important, and in some cases, crucial for humanity.[42]

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[38] Martin Stephens. The Animal' Agenda. Vol.14, n.3.p 22.

[39] Ibid,p.24-5.

[40] Peter Singer.***Animal liberation***. London: Pimlico. 1995. p. 28.

[41] João E. Régis Lima. **Vozes do silêncio:** cultura científica, ideologia e alienação no discurso da vivissecção. 1995. Dissertation (Mestrado em Psicologia) - Institute of Psychology, University of São Paulo, São Paulo. p. 18, describes an experiment conducted by the Institute of Biosciences University of São Paulo in neurophysiology, when I was an undergraduate many pigeons had their cerebellum surgically removed so that students could observe their behavior. According to the author, that experience was a sad scene of suffering as the animals lost their motor coordination could not stay upright, and after all the classes they were put down.

[42] Stephen Kaufman. Most Animal Experimentation does not Benefit Human Health. Janelle Rohr (Ed.). **Animal Rights**: opposing viewpoints. San Diego: Greenhaven Press, 1989. p. 76.

Nonetheless, most European countries have already banned vivisection, and the use of animals in UK universities for testing the surgical skills of doctors, dentists or veterinarians has long been banned. However, elsewhere in the world this teaching technique is still used in many educational institutions in subjects such as anatomy, surgical techniques and toxicology. Other subjects such as physiology, pharmacology and surgical techniques, for example, also often use live animals in practical classes on courses such as biology, pharmacy, dentistry, and veterinary medicine.

This is due more to the ease and speed that it provides for the research, enabling researchers to achieve rapid production of scientific articles on the scientific advances that they make. Since most researchers are trained to perform this type of research, they are reluctant to implement alternative methods, which require another kind of training for which they are not properly prepared. Some students, for moral conscience reasons, have refused to perform painful procedures on animals as a requirement to obtain approval in certain courses, and some universities already provide alternative activities for them to perform or allow them to enroll in compatible disciplines or courses in other faculties or universities. [43]

3. THE DAMAGE AND UN (NECESSARY) SUFFERING IN VIVISECTION

> In order to reestablish the veterinary profession's dignity of the profession and what I believe to be its primary responsibility for animals' health and well- being, all members of the profession need to take much more radical and affirmative stance in support of animals' welfare and rights. **Michael Fox**[44]

The antivivisectionists can be put into two groups: those who consider a practice unnecessary and those who feel that it produces little benefit to men in relation to the damage it causes to animals. Those who believe that a practice is unnecessary say that use of preventive medicine, the development of public health measures, the use of clinical studies and

[43] According to Tom Regan. **The struggle for animal rights**. Clarks Summit: International Society for Animal Rights, 1987. p.146: "For we have on our campus a rich and rare opportunity to show that advancements in science can blend with advancements in our recognition of the ethical sensitivities of our students, to show that our methods of instruction are progressive, not static, and to show that we are able to respond positively to new challenges without animosity or anger "

[44] Michael Fox. **Inhumane Society:** The American Way of Exploiting Animals. New York: St. Martin's Press.1990. p.200.

development of alternative resources completely eliminate the need to use animals in scientific experiments.[45]

Authors such as Peter Singer and the Australian Association of Humanities Research use the cost-benefit balance as an argument and suggest that animal testing produces a huge amount of suffering for animals and little benefit to humans. Sharpe, for example, says that our choice should not be like "the dog or the child", but between good and bad science, since animal experimentation can only lead to knowledge about animals in artificial conditions but not about humans.[46]

Those who advocate the abolition of institutionalized exploitation of animals claim that governments might as well use the resources for research on animals to fund safe-sex education, free syringe and condom distribution, politically contested and doubtful election return programs, but that would drastically reduce the number of infected people. Claiming that the welfare of humans cannot be replaced by animal welfare is an argument that comes from a mistaken understanding: that these figures are excluding, when in fact they are complementary.

Many consider scientific research using animals as a model for studying human diseases as being not very reliable, apart from wasting large sums of taxpayers' money. In their view, the amount spent on these studies could be well used to fund clinical research and health programs for the neediest population.[47]

For Marjorie Spiegel:

> While billions of tax-dollars are spent each year to literally torture animals – supposedly for our benefit – many humans in this country lack access to even basic health care and nutrition. Further, due to our priorities (and those of drug companies which fund much of research), people even lack access to information which might save their lives, such as the fact that many of our nation' s biggest killers – heart disease, high blood pressure, cancer, and diabetes – can all be prevented or corrected through diet..[48]

[45] Andrew N. Rowan The Use of Animals in Experimentation: An Examination of the 'Technical' Arguments Used to Criticize the Practice. In: Robert Garner(Ed.) **Animal Rights**: The Changing Debate. New York University Press. 1996, p.106.
[46] Ibid, p.112.
[47] Stephen Kaufman. Most Animal Experimentation does not Benefit Human Health. ROHR, Janelle (Ed.). **Animal Rights**: opposing viewpoints. San Diego: Greenhaven Press, 1989. p. 76.
[48] Marjorie Spiegel. **The Dreaded Comparison**: Human and Animal Slavery. New York: Mirror Books, 1996. p.72.

Penicillin, for example, is lethal to pigs and hamsters, although it is very beneficial to man. Whereas thalidomide is harmless to many animals, it caused the birth of more than 10,000 children with physical disabilities. Tylenol, widely used to as a pain-killer, it is fatal to rats, and the antibiotic clorafenicol, which has been extensively tested on animals, can cause fatal blood diseases in humans. Moreover, there is considerable empirical evidence that these experiments are counterproductive, as is the case of research on smoking or asbestos-related cancer, since researchers cannot induce these diseases in laboratory animals. This causes a delay in the adoption of measures to control these products which continue to kill thousands of people.[49]

Researchers from the Universities of Boston and Harvard say that the new medicines and vaccines have been responsible for only 1% to 3.5% of the decline of total mortality in the United States since 1900, when, in fact, the decline of mortality due to epidemic diseases such as tuberculosis, typhoid fever, smallpox, diphtheria and others resulted from improvements in health treatment, and higher hygiene, diet and lifestyle standards [50].

According to Garner, one of the main problems of this type of antivivisectionist argument is that charts and statistics only take into account mortality rates, without including the decrease in morbidity and suffering of those who survive after using drugs developed from animal testing.[51] While we can say that the modern medical research has contributed directly and in large part to the increase in life expectancy, we cannot deny that they were also largely influenced by the knowledge derived from experiments with animals.[52]

Indeed, many scientific advances such as the isolation of the AIDS virus, the discovery of penicillin and anesthesia, the identification of blood types, the need for certain vitamins, the development of X-rays and the discovery of risk factors in heart diseases were all made through studies with the human population.[53]

Albert Sabin, for example, who discovered one of the most important vaccines against polio once said before the American Congress, that "the work of prevention was long delayed due to an erroneous understanding of the nature of the disease in man, based on misconceptions of the disease in monkeys." It happens that the research conducted with monkeys falsely

[49] Stephen Kaufman. Most Animal Experimentation does not Benefit Human Health. Janelle Rohr (Ed.). **Animal Rights**: opposing viewpoints. San Diego: Greenhaven Press, 1989. p. 76.
[50]Ibid. p. 76.
[51] Ibid. p. 76.
[52]Robert Garner. **Animals, politics and morality**. Manchester: Manchester University, 1993. p.107.
[53]Peggy Carlson, Whose Health is It, Anyway? **The Animals 'Agenda**. November/December.1996. p.18.

indicated that the polio virus infected the nervous system alone, and it was only after the research started being performed in cultured human cells that scientists learned that the virus infects the non-neural tissue. [54]

In *Course of animal handling*,[55] by the Oswaldo Cruz Foundation, the main methods of "euthanasia" (a euphemism for the act of killing the animals after experimentation) are listed:

a) *Cervical dislocation* - the animal must be supported on a surface onto which it can grab, and immediately after, you must hold the animal's tail with one hand and with the other handle the surgical forceps, or similar object, on its neck region, then press the clamp down and forward, pushing the head of the animal while you pull the tail in the opposite direction.

b) Beheading - this technique is performed using a guillotine, even if the blood collected after decapitation is often contaminated by saliva and respiratory secretions.

c) Exsanguinations - method often used to obtain hyperimmune serum of rodents and rabbits, which takes place by means of puncture of heart or large blood vessels .

Strictly speaking, talking about euthanasia in such cases is a fallacy because you cannot talk about death when the very author causes the suffering you want to shorten. It is as if a person shoots another, and seeing him or her fall, gives the famous "mercy shot", and later on claims that the shot was given for the victim's sake and only to accelerate a death that was certain, thus shortening his or her suffering.

d) Rapid freezing – it consists of "quickly putting the animal into liquid nitrogen."[56]

It should be emphasized that in 1959, the zoologist William Russell and microbiologist Rex Burch published the book *The Principles of Humane Experimental Technique*, which lay the foundations of the practice called the three "Rs": Replace: proposing the replacement of the use of animals by phylogenetically more primitive life forms, or by simulations; Reduce, *w*hen this is not feasible, the number of animals, specimens and procedures should be reduced to achieve the objectives of the study, and Refine, modify existing processes by using techniques as to minimize pain, distress and discomfort of the animals. [57]

Although this 3 Rs practice has had strong scientific impact, and they were immediately incorporated by the *Royal Commission of Ethics* of the United Kingdom and adopted by the

[54] Ibid, p.19.
[55] Fabienne Petitinga Paiva and others. **Course on Handling of Animals.** Salvador: Ministry of Health Oswaldo Cruz Foundation. Gonçalo Muniz Research Center, Oct 2004, p.20.
[56] Ibid
[57] Heidi J. Welsh. Animal Testing and Consumer Products, 1990, p.59

United States as a condition for the release of project funding in biomedical research areas, it only legitimizes the conduct of cruel proceedings against animals. Indeed, the definition of alternatives has been the subject of several controversies in the legal field. On the one hand there are those who think that the only alternative is to use an anesthetic during a procedure. On the other hand there are those who believe that the only real alternative is to replace the animal using another non-animal dependent instrument, such as a doll, biological culture, computer simulation, etc. The latter I refer to as abolitionists who defend only one of the 3Rs: replace, not reduce nor refine.

Vivisectionsts however, go against the values that have already long been established in the international community. The mere use of anesthesia cannot be considered as an alternative as this is a requirement even in art. 3, I of Act n. 6638/79, and to go back to this point is a step backwards not in line with the spirit of the 1988 constitution. As a matter of fact, as the law of environmental crimes intended, in the most civilized countries any procedure that causes pain or suffering to animals is banned unless there is no alternative, i.e. techniques and methods that waive this use.

Paulo de Bessa Antunes takes a very conservative position understanding that scientific experimentation on animals is a "need unsurpassed in the current stage of development of science". For him to become such a criminal is a dead letter or a serious obstacle to scientific development[58].

It would have been better, he continues, if the Executive had vetoed this article, "avoiding extremely important constraints for scientists, researchers and for their own national and international legal bills".[59]

Paulo de Bessa Antunes, goes further:

> Well, there are always alternatives. The scientist can make experiments in new drugs and medicine directly into humans, or even not test them! Or, we can do tests for pesticides and poisons against pests in children, for example![60]

This position, however, is also untenable and no child needs to ingest pesticide or poison so that scientists can discover the degree of toxicity of a product because there are more than 300 alternative techniques available in the market that make the use of animals or children in

[58] Paulo de Bessa Antunes **Direito Ambiental.** Rio de Janeiro:Lumen Juris, 2004. pp.913-914.
[59] Ibid, p. 914
[60] Ibid, p. 914

toxicity tests redundant. Finally, anti-vivisectionists argue that the scientific methods applied directly to humans have been responsible for advances in medicine, and that the use of animals persists only because the chemical and pharmaceutical industry still prefer using this misleading and contradictory method as it offers flexible results that allow them to hide the true risks their products present.

Nevertheless, the technical arguments have being ignored by researchers because they think the anti-vivisectionists arguments not worth a response.[61]

4. CRIMES AGAINST ANIMALS IN SCIENTIFIC RESEARCH

> Because animals are property, we consider "humanitarian" a treatment that, if given to people, would be considered torture. **Gary Francione**[62]

Article no. 64 of Act n. 3.688/41 (Misdemeanor Act) had already banned cruelty or the submission of animals to excessive work with an applicable penalty of ten days up to one month of simple imprisonment or a fine. Its first paragraph also mentions the carrying out of painful or cruel experiments on live animals, even for educational or scientific purposes, but only if it took place in public – or open in public places.

That is because vivisection has always been considered atypical behavior, and the first article of Act n. 6638/79 established that the standards for the practice of teaching and scientific vivisection of animals were specifically determined in the following statement: "It is permitted, throughout the national territory, the vivisection of animals, under this law".

The Act n. 64704/69, in turn, in its article no. 2, letters c" and "d", established the competency of veterinarians to provide medical care for the animals used in testing as well as the technical and health management of vivariums.

The only legal element that could make that conduct criminal, i.e. a contravention, was its performance in a public place or in a space open to the public. This shows its biocentric character as the legislature's concern was strictly regarding humans.

[61] Andrew N. Rowan. The use of animals in experimentation: an examination of the 'technical'arguments used to criticize the practice. In: In animal Rights: the changing debate, NYU Press, 1996. p.104.

[62] Gary Francione. Animais como Propriedade. Trad. Regina Rheda. In: Heron Santana Gordilho and Luciano Rocha Santana. **Revista Brasileira de Direito Animal.** Ano 2. n.3. Salvador: Editora Evolução. Jul/dez 2007, p.14.

Certainly, Act n. 6638/79 requires research centers to be registered and authorized by a competent government agency, the animals to be place in vivariums for over fifteen days prior to vivisection. This cannot be performed at any elementary, middle or high school, or any place frequented by children or adolescents, and that the procedures should be performed with the use of anesthesia and the supervision of an expert if the animal has to be euthanized.

Article n.6 of this Act encumbers the Executive to regulate the licensing and supervision of animal facilities and experiment centers within 90 days. by establishing the competent bodies for the registration. However, enforcement is rare.

With the advent of the 1988 Constitution, however, environmental standards acquired constitutional status for the first time, forcing the government and the community to defend and preserve the environment for present and future generations, requiring them, among those obligations, to defend wildlife, and prohibiting any practice that causes cruelty to animals (art. 225, VII, of Brazilian Federal Constitution).

In the light of this new constitution, the Federal Act n. 9605/98 was published. Paragraph 1 of art. 32 implicitly repeals art. 64 of Act n. 3688/41, and the 1st article of Act 6638/79, by including vivisection in the list of environmental crimes, stating that this practice is no longer an option and will be prohibited, except, ultimately, when there is no alternative.

With the new law, vivisection, which had been the rule, became the exception, and from then on should be considered, in principle, an environmental crime, unless properly shown that this experiment was performed for the benefit of the animal itself.

The core of the crime of cruelty to animals is the realization of a cruel or painful experience on a live animal, where the concept of pain goes beyond the physical pain suffered at the time of the procedure, and also the anguish felt before and after the procedure. Moreover, in light of paragraph 2 of art. 64 of this Act, if the animal dies, the penalty will be increased by one sixth to one third. Furthermore, I believe that any cruelty against animals in vivisection , as in humans, is a criminal act.

Many authors argue, however, trying to discredit the suffering of sentient animals and claim that human beings have a greater capacity to suffer and feel pain, because only in the human species there are cases of addiction, depression, schizophrenia and acts of violence such as rape and murder.

We must emphasize that neuroanatomy has shown that all vertebrates have a similar basic morphological organization, consisting of spinal cord, brainstem, cerebellum and brain and

the nervous system of these animals has the same function to promote mediation between the mind and behavior. Each group of vertebrates have developed their mental functions according to their evolutionary level, where the pain, an unpleasant or painful sensation caused by an anomalous state of the body, is a process common to all members of this class.[63]

There is no scientific proof that men feel more pain or suffering more than animals and this has led Michael Fox to propose the following account for the ethical use of animals in scientific research: if the pain and suffering of the animal is greater than the amount of pain and suffering that a man can bear under the same conditions, the experiment should not be allowed".[64]

If the experiment, however, is performed on an animal which is already sick, and for its own benefit, we believe the conduct is atypical, since it preceded the necessary precautions to prevent the suffering of the animal. It seems quite clear that the environmental criminal act recognizes that there are alternative methods, therefore, the use of animals in scientific procedures should not be performed unless there is scientific evidence that the use of animals is entirely necessary. Even when this occurs, it is legally obliged to use the fewest possible and all available means to cause the least amount of pain and suffering to animals.

This is actually an abnormal criminal offense type, because besides the core and the descriptive elements, it contains a normative element, which is the existence of "alternatives" that can avoid pain and suffering of the animal. As a normative element, the term "alternative resources" requires the operator to use extralegal elements and value judgments for its comprehension, as occurs, for example with the concept of "honest woman" in the definition of kidnapping crimes. (in old Brazilian Criminal Code). Indeed, the word "alternative" comes from the Latin *alter* (other), meaning the choice of another or others. So the alternative resource must be to replace vivissection.

The article nº 32 of Environmental Crimes Act prohibits the use of animals in scientific procedures, unless the research is of fundamental importance to public health and it is shown that for that purpose there are no alternatives available. In this case, the use of animals is

[63]Tâmara Bauab Levai. **Vítimas da ciência**. Campos do Jordão: Mantiqueira, 2001. pp. 7-8.

[64] Michael Fox. **Inhumane Society:** The American Way of Exploiting Animals. New York: St. Martin's Press.1990.P.64. According to the author, p.207: "From an animal rights perspective, it may reasoned that veterinary schools ought not to exist – or at least not function as they do today, turning out graduates to serve the industries of animal exploitation. It is surely unethical to make animals suffer and turn them into test substitutes to advance our technological prowess in developing ever more lethal weapons of self-destruction. And we should likewise question the ethics and morality of those who test new poisons, pesticides, predaticides, traps, and even cosmetics and nonessential household consumables on laboratory animals. "

considered atypical behavior, although the researcher has to respect the principle of minimization of the suffering applied.
One should not forget, however, that most animal experiments performed for didactic purposes are mere statements of already consolidated knowledge. This is not unlike biomedical research, in which often serious injuries are caused in animals only to prove the functioning of the biological systems of these creatures or the use of new therapeutic techniques.

Procedures often performed without anesthesia or with inadequate anesthesia lead to the death of hundreds of animals by bleeding or simple euthanasia. Animals are used for learning to perform scissions, sutures and resections of organs, procedures that could well be achieved with the use of alternatives. With the advent of the Federal Act n º 11794/2008, known as "Arouca Act", some vivisectionists celebrated as if it were a kind of "legalization "of animal experimentation.[65]

In fact, the particular standard criminal law was not repealed by Arouca. On the contrary, it was confirmed as we can see from Article 20, as follows: "The penalties in the arts. 17 to 18 of this Act shall be applied by CONCEA, without prejudice to the corresponding criminal liability.".

Many authors claim that vivisectionists are undergoing a process of "conditioned ethical blindness" the same way that a mouse can be conditioned to press a lever in exchange for food. Indeed, they are conditioned to be professionally rewarded, provided that they ignore the ethical aspects involved in the issue.[66]

In short, we can say that the majority of experiments on animals carried out in Brazilian universities explicitly violate the rules and constitutional principles, besides being an eco-criminal conduct, even given the newly enacted Federal Act n º 11794/2008 intended to regulate such experiments.

The most appropriate alternative, legally speaking, for research institutions is the use of alternative methods and the development of new ones that do not violate the basic rights of animals.

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[65] See Tagore Trajano Silva. **Brazilian Animal Law Overview: Balancing Human and Non-human Interests,** Journal of Animal Law May, 2010 6 J. Animal L. 81

[66] Donald J Barnes. A Matter of Change. In: Peter Singer. **In Defense of Animals**. New York: Basil Blackwell,1985. p. 160.

It is also important to mention that, according to the principle of maximum effectiveness, Act n. 11794/2008 in many aspects violates article 225, § 1, VII, of the Federal Constitution as it makes a constitutional norm flexible that prohibits any and all practices that expose animals to cruelty. Indeed, given its unconstitutionality, the " Arouca Act" does not exclude the unlawfulness of vivisection in the face of art. 32, paragraph 2, of the Criminal Environmental Code, as there are alternative methods available.

There are numerous alternative methods for animal testing on the market, and the main one is prevention, which consists of granting tax incentives and implementing environmental education projects that encourage the public to adopt a healthy lifestyle, which combines, for example, a vegan diet with the practice of sports. Clinical studies, for example, use human volunteers. Case studies, and statistical analysis of autopsies, in turn, are related to the clinical observations of a particular disease, while epidemiology performs studies in entire populations.[67]

The cultivation of tissues, cells and organs can replace animals in testing for toxicity and irritation, while studies with images such as computer tomography, magnetic resonance chromatography and mass spectrometry can achieve early diagnosis. Swedish scientists have shown that the combination of four tests *in vitro* provides the toxicity of a product in 80% of cases, against only 65% of LD50. The European Union banned this type of testing and sale of products tested in 2003 in the European Community countries and other countries.[68]

Human placenta can be used to develop techniques for microvascular surgery and for toxicity tests, while mechanical models, computers and mathematical models can be used for car crash tests, for testing flammable materials and for the teaching of medicine and surgery.

CONCLUSIONS

The case of the Silver Spring monkeys began when Alex Pacheco, currently leader of PETA (People for Ethical Treatment of Animals a) gave the police evidence of cruelty in the animal laboratory of Dr. Edward Taub. The investigation of Pacheco in 1981 led to an intense legal battle that lasted ten years. The battle was expensive and time consuming, but was used to promote the education, publicity and increasing

[67] According to Peter Singer. ***Animal liberation***. London: Pimlico. 1995, p.88: "Although tens of thousands of animals have been forced to inhale tobacco smoke for months and even years, the proof of the connection between tobacco use and lung cancer was based on data from clinical observation in human beings."

[68] Tom Regan. **Jaulas Vazias**. Trad. Regina Rheda. Porto Alegre:Lugano. 2006. p.212.

> awareness on animal rights in general and in particular the issue of abuse in animal science. **Helena Silverstein** [69]

On April 29, 2002, a public prosecutor from the city of Salvador, Brazil, Luciano Rocha Santana opened a civil investigation nº 007/2002 and 12/2005, to investigate accusations of abuse in animal testing at the Hospital of the School of Veterinary Medicine of UFBA – Federal University of Bahia. After a long process of negotiation, a "Termo de Ajustamento de Conduta (TAC)[70] was celebrated, foreseeing for the abolition of vivisection at the Federal University of Bahia, with the replacement and development of alternative methods.[71]

Among its provisions, the agreement calls for the abolition of the use of animals as a educational and scientific resource, unless it is for the benefit of the animal itself. It also called for the promotion of interdisciplinary seminars and the development of alternative methods to animal testing, and inclusion of an animal ethics course in the curriculum.

By irony of fate, one of the best examples of an alternative to vivisection occurred when researchers from the School of Veterinary Medicine, Federal University of Bahia (UFBA) in partnership with scientists from Fundação Oswaldo Cruz in Bahia (Fiocruz-BA) formed an alliance between orthopedic surgery and the insertion of stem cells in the injured spinal cord nerve passage of a cat that was accidentally hit. This research suggests that, in future, not only animals but also most humans with cervical lesions, may be able to recover the movement of the legs**.**[72]

Whatever the case is, research centers, universities and the pharmaceutical and chemical industry have to understand that by simply copying (bad) technology from developed countries contributes little to our technological development**.**

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[69] Helena Silverstein. **Unleashing rights**: law, meaning, and the Animal Rights Movement. Michigan: University of Michigan, 1996. p.168 (our translation)

[70] A legal ajustment to the code conduct.

[71] Heron Santana Gordilho e Luciano Rocha Santana. **Revista Brasileira de Direito Animal.** Ano 2. n 3. Jul/Dez 2007, pp. 305/309.

[72] According to Euler Moraes Penha. In: Jornal da Ciência. Publication of SBPC - Brazilian Society for the Advancement of Science. Rio de Janeiro. April 3, 2009. Year XXII. No 641st "It was the first time that such a procedure has been tested in animals of greater size, which have suffered accidents and natural that had a time of immobility in the members' Penha cites two cases. The cat I mean, hit for 5 months, had a piece of his spine crushed. He spent eight months without control and without sensitivity of the muscle belly up to the tail. After just over a month since it has undergone the procedure, already controls the abdominal muscles and could the first steps, accompanied by veterinary physiotherapists. The other patient, the cat Lola, had 1 year and 6 months when they fell from the apartment where he lived, on the seventh floor, on a wall, which caused a complete rupture in his column. The animal passed the same treatment for 15 days, and I can remain standing without assistance. "We believe that soon the animals will return to a normal life, but in any case they are much better than when they were submitted to surgery," says veterinarian. (our translation)

It is necessary, however, that the Brazilian State increasingly fosters research for alternative methods to animal testing, setting a positive example for other nations while simultaneously developing new technologies which can bring revenue to the country in the future**.**

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