

Theme II

Alternative methods for teaching and training - Humane Education

103960

Bioethics and research: course on alternative methods for postgraduate students

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The continuing progress in the field of in vitro methods has opened up new prospects and is becoming an essential element in the whole field of biomedical research, from its most fundamental aspects to its daily applications. Moreover, the European Directive 2011/63/EU1 dictates that all personnel working with experimental animals should be educated to be competent to work with animals. The course Advances on reduction, refinement and replacement of animal experimentation is a 2.5 ECTS course included in the first year syllabus of the Master in Research, Development and Control of Drugs (Faculty of Pharmacy, Universitat de Barcelona). This course is addressed to Master and PhD students with the aim to disseminate 3Rs knowledge and to raise consciousness for the scientific soundness of the 3Rs methodology. During one week, the course is performed combining theoretical lectures with practical laboratory techniques. The theoretical aspects are focused on the history of the 3Rs and some of the most relevant alternative methods of toxicology in vitro. Technical features of the in vitro cell culture and specific cell-based assays protocols were conducted in laboratory classes. However, the short time period devoted to makes difficult to cover all disciplines dealing with alternative methods. For this reason, students should prepare an oral presentation related to one or some 3Rs methods for formative evaluation. Such assignments allow students to demonstrate individual initiative and provide the opportunity for idea exchanges. At present, the success of the course is showed by the students grades obtained in the lasts editions.

KEYWORDS: 3Rs; education; postgraduate students; alternatives; training

105301

Correlation of virulence factors production in vitro by Candida to pathogenicity in vivo experimental model of Galleria mellonella

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The aim of this study was to evaluate the pathogenicity of Candida species in vitro and correlate them with their virulence in vivo. We analyzed 33 isolates of Candida spp. isolated from the oral cavity of HIV patients, including the following species: C. albicans, C. dubliniensis, C. glabrata, C. tropicalis, C. krusei, C. parapsilosis, C. dubliniensis, C. norvegensis, C. lusitaniae and C. guilliermondii. For the in vitro study, the strains of Candida were tested for enzymatic activity for the production of proteinase and phospholipase. In vivo study, the strains of Candida were inoculated in invertebrate models of Galleria mellonella to induce experimental candidiasis. The enzyme activity was observed in most species, with predominantly in C. albicans and C. dubliniensis. C. guilliermondii was the only species that produced no enzyme tested. C. albicans and C. dubliniensis were also the most virulent species in G. mellonella. The Pearson correlation test showed that there is significant correlation between the ability to produce proteinase and phospholipase by Candida strains with their virulence in G. mellonella. It was concluded that there was significant correlation between the capacity of produce proteinase and phospholipase by Candida strains with the pathogenicity in G. mellonella for all species. C. albicans and C. dubliniensis were the most pathogenic in both in vitro and in vivo tests.

KEYWORDS: Candida spp.; proteinase; phospholipase; G. mellonella



106131

THE USE OF ANIMALS IN VETERINARY EDUCATION. A bioethical analysis**Tellez, E.**

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Using animals in teaching involves conflicts of interest among students, teachers and animals themselves. Moreover, the ethical (or unethical) behavior of veterinarians is acquired during their studies and it is seen in their professional practice. Therefore it is important to examine those arguments used to justify harmful practices in veterinary medicine. Three arguments are developed in this study as anomalies in the teaching-learning paradigm. 1) Animals as objects rather than subjects: this anomaly analyzes the false idea that animals have no mental life or capacity of suffering (based on the Cartesian tradition indicating they are machines), as a justification to harm them in order to acquire knowledge. 2) Hands-on learning is better than alternatives: this anomaly contrasts the traditional way of learning concerning "hands-on" in harmful practices vs. the implementation of the 3 R's as an ethical way of learning. 3) Usefulness of alternatives: the conservative tendencies of traditional education seen as the usefulness of alternatives, perhaps due to inertia or the ignorance of its benefits are analyzed. The ethical dilemma that should be considered in the teaching of veterinary medicine is the tolerance to harm animals with the excuse to achieve a purpose (in this case, the acquisition of skills). It is therefore of greatest importance to create awareness in Veterinary teaching institutions of the gap between traditional harmful learning and humane education and that minimal ethical principles of nonmaleficence and minimal harm must be part of the Veterinary curriculum.

KEYWORDS: *Bioethics; ethical way of education; veterinary teaching; training with animals*

106194

Evaluation of the mutagenicity of butanolic and acetate extract of *Campomanesia lineatifolia***Araújo, G. L.**

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The use of medicinal plants is an old practice in Brazil, mainly among the most lacking populations. *Campomanesia lineatifolia* Ruiz and Pav. (Myrtaceae) is one of those plants. A native edible species found in the Amazon Rainforest, commonly known as gabioba. *Campomanesia* species are frequently used in traditional medicine for dysentery, stomach problems, diarrhea, cystitis and urethritis and hepatic disorders. In this work, the Ames test was used to evaluate the mutagenic potential of the butanolic and acetate extract of the leaves of *Campomanesia lineatifolia*. Three concentrations of butanolic and one of acetate extracts were tested, using DMSO as solvent. The assays were performed according the plate direct incorporation procedure, with the TA98 and TA100 strains of *Salmonella typhimurium*, with and without metabolic activation. After statistical analysis, indications of mutagenicity of both extracts were verified in the TA98 and TA100 strains, with some of the tested concentrations being statistically different from the values of the negative control. However, in none of the strains the mutagenicity ratio was larger or equal to 2, for any of the evaluated concentrations, not allowing the characterization of the vegetable extract as mutagenic. Besides, in the assays with metabolic activation any significant alteration was verified in the revertants frequency regarding the negative control.

KEYWORDS: *Mutagenicity; Medicinal Plants; Ames Test; Vegetable extract; Campomanesia lineatifolia*



106248

Use of synthetic models as alternative method for education and training on wildlife animal course

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The popularization of Brazilian and exotic wildlife species, has increased in recent years, thus also increases the demand for medical services on wildlife animals in small animal clinics. However, the veterinary professionals are not familiar with the animal background, since the veterinary schools do not value, the wildlife's course in their curriculum. Furthermore, it should be noted that the number of wildlife animals seen at university veterinary teaching hospitals is lower when compared with pets and livestock. Therefore, the practice with wild animals is deficient, when it comes to practice of physical restraint, physical examinations, and collection of samples such as blood and urine. Thus, we proposed the preparation of synthetic models of organs of birds and reptiles to be used in the wildlife course. To produce the models we used EVA (ethyl vinyl acetate), glue, nylon and cotton, foam-coated fabric, cotton fabric and plastic and rubber like resin. During the practical classes, students performed the techniques of physical restraint, blood collection, fluid administration and artificial feeding of birds and reptiles. Four different models were made and used in the period from August to December of 2011. The models were accepted by all students (100%), present in practical classes. The students participated more effectively in the classroom, without fear and nervousness. The use of synthetic models in wildlifes practical course has contributed to the student learning experience. Therefore it can be used as a viable and low cost to the ethical teaching of veterinary medicine, thus reducing the vivisection.

KEYWORDS: *wildlife animals; synthetic models; education; alternative methods; teaching*

106279

Alternative methods: Discussing conceptions and practices in science education

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The scientific questioning of the use of animals in education lies in the 1960s when neuroscience established that neural structures related to the expression of emotions and to the expression of higher psychological functions are also present in animals in different representations depending on the species. This knowledge has ethical implications, because the moral decision to use animals in educational situations was based on the premise that the animals did not have reasoning and consciousness, which today is questionable. Unlike the research, the use of animals in education usually aims to demonstrate and illustrate the phenomena or practices already known and that is the reason why some movements indicate that the use of animals for teaching purposes should be subject only to replacement. In this way, alternative methods are not only related to animals, but also related to a science education that aims to train scientists capable of critically reassess their methods according to the system of moral values in which they are immersed. This study aimed to discuss Brazilian studies about the conceptions of teachers and students on the use of animals for teaching purposes and on the alternative methods. The results show that teachers and students usually seem to support the idea of alternative methods, but their practices do not match the speech presented. Most of them justify the use of animals due to a better learning and non-existence of alternative methods which it is not true. This scenario does not contribute to a truly ethical scientific formation.

KEYWORDS: *Alternative methods; science education; animal ethics*

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106414

Alternatives to animal testing in the faculty of veterinary medicine of the Universidad Nacional Autonoma de Mexico

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The use of non human animals is the most accepted way to obtain knowledge and psychomotor skills needed for future professionals in the academic system The UNAM is not the exception and the Faculty of Veterinary Medicine, there mistreat non-human animals in different ways causing pain, stress and injury. In recent years, there have been doubts in minds of many students and teachers of the unethical way the medicine principles are being taught and they forced to commit these acts of abuse against animals, feeling their sensitivity and moral or ethical principles violated, therefor their integrity. Dissections and / or vivisection sends the wrong message to students, instead of learning the anthropocentric and specist values, who claim that only non-human animals are the subject of moral consideration, they learn that life is disposable and that nonhuman animals can be used at will. Consciously or unconsciously these acts remain qualities such as sensitivity and compassion to the students. Some teachers deny the importance of these qualities and consider them as a weakness. The alternatives are ethical educational media and should completely replace the harmful use of nonhuman animals and be use in combination to achieve the educational objetives The use of alternatives allow to acquire the desired knowledge. Humane education which advocates a high-quality ethics and respect for life should be the trend to continue throughout the world. This work consider the ethical conflicts in which students enter as they are forced to harm animals and their right to conscientious objection.

KEYWORDS: *Veterinary Medicine, ethics, Vivisection, Alternative Methods, Conscientious objection*

106492

Inexpensive homemade models for vascular access training in veterinary practice

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Searching for alternatives in the use of animals in teaching is an important ethical issue. The objective of this work was to describe simple and inexpensive models of foreleg and neck with a simulated cephalic and jugular vein, respectively, for teaching venipuncture in dogs. Foley catheter or segments of common rubber tourniquet, bandaging tape, IV (intravenous) administration set, IV bag added powdered food coloring, foam and gauze, were used in the preparation of the models. Additionally, a block of wood with a central groove in the foreleg model, standard breathing tubing and a plastic tray as a base in the neck model were used. Both models were design to represent real diameter of vessels, and proportion and consistence of structures of the leg and cervical region. The average cost of each model was five dollars. The models permit learning exercises of vascular access and venipuncture techniques using syringes, vacutainer, catheter or butterflies. The models do not substitute a live animal, but it helps to develop the skills and confidence necessary before a first real vascular access. This previous training avoids animal manipulation by inexperienced person, and avoids unnecessary contact by the person with infectious material during the learning.

KEYWORDS: *model, dog, training, venipuncture, low cost*



106510

E-learning courses as powerful tools for Laboratory Animal Procedures training in Latin America

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Introduction: In Latin America there is still a strong need for trained laboratory animal's workers with special emphasis in the 3Rs principles. Thus an e-learning campus is a valuable tool to mediate knowledge through demonstrative videos, theory classes, forum discussion and programmed chat sessions to open new ways of share experiences in laboratory animal sciences. Objective: The main focus is to present the value of virtual training courses about Experimental Procedures in Rodents and Rabbits in Spanish language through the virtual educational platform Aula Virtual Bioterio. Methods: The educational material was composed of notes, bibliography and multimedia presentations. After completion the readings and review materials, they make different participations in the forums. At the end of each thematic module, every student made a self-assessment test and when they end all modules they took a final evaluation. Results: The rating of the e-learning tool was 100% positive. The platform was generally accepted as a friendly tool to learn and the students were very active in the tutorial forums and achieved very satisfactory scores on their exams and also showed agreement and compromise to execute and spread the lessons learned from in their work places. Conclusion: In view of the application of the 3Rs, practical training cannot be replacing 100% by e-learning methods. But, a thorough understanding of the techniques before practical experimental procedures will help to generate conscience and prepare participants for laboratory animal work. Finally, we strongly believe that the e-learning modality reduces the use of animals for teaching purposes.

KEYWORDS: *Education; Refinement; Laboratory Animal; e-learning*

106532

Education and animal experimentation, ethics in higher education

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Aims: Promote respect for animals introducing to the existing national laws and regulations on the use and handling of. Promote a quality and humane education Abstract. Animals are used for education that put them in a situation that enables us to observe and obtain information but this situation does not consider their welfare They are giving us an invaluable service, but against his will. They are beings capable of suffering and some scientists have difficulty recognizing their suffering. Therefore, we believe that education provided in the Faculty of Zaragoza, UNAM, must not forget the humanitarian part in education. We must not confuse our students, we ask them to follow the laws and rules that exist but in the other hand many teachers ignore them to take the shortest route when we use animals in class, regardless the emotional characteristics of students, teachers or animals themselves. Ethics does not excuse us for doing so. Teachers need to build the transcendental value system that forms the basis of the academic vocation, individually and as a group. In many cases, they are resistant to change. They believe the best is the use of animals and softwares reduces the quality of teaching. However, there are several studies comparing the effectiveness of alternative methods to traditional methods. Therefore, we need to make teachers aware of the principles of the three R's. reduction, refinement and replacement, this last one the goal of our university Key words. Humane education, ethics , alternative methods.

KEYWORDS: *Humane education; ethics; alternative methods*



106565

Rereading the use of animals in teaching and research by teachers at PUCRS from the formalization of the law Arouca: Subsidies for an appropriate action at CEUA/PUCRS

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Currently, with the approval of Law Arouca, Law 11794/08 that regulates the use of animals in research and teaching in Brazil, relevant discussions have appeared in the national scientific outlook on animal use in research and education, strengthening the prospect of Animal Ethics in our country. The Act provides that it is the responsibility of the Institutional Ethics Committees (CEUAs) control the activities of teaching and research in universities. In order to support the CEUA at Pontificia Universidade Católica (PUCRS), in its proposals for suitability to the Law, a project to the acceptance of teachers and researchers of health and Biological Sciences at the University on the replacement of animal use was performed by was realized. The results of qualitative research, were analyzed according to the method of Engers. The research realized with teachers showed that awareness of this university segment is increasingly present in relation to no-human animal, as to regarding its handling, sensitivity and their welfare. The respondents emphasized the importance of searching, validation and use of alternative methods to replace the no-human animal which have been widely valued internationally. The findings of the research allowed to detect the growing interest in alternative methods also in our reality. The educational role of CEUAs becomes increasingly necessary, while acknowledging the difficulty of operation of these committees in societies like ours markedly anthropocentric. The formalization of the law must have influenced this proposition of a new culture of respect for the animals felt among the members of the groups interviewed.

KEYWORDS: *Bioethics; Education; Animal use alternatives; Laboratory research; Ethics Committees*

106578

Animals in education: Ethical Considerations and Substitutive Methods

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Considering the latter, animals are used by universities for teaching purposes in procedures for dissection or vivisection. This paper intends to raise ethical issues concerning the use of animals for teaching purposes, questioning the need for such practices, particularly the vivisection, and to present substitutive methods for that matter. This work will be based on specific literature, scientific articles and trusted websites about animal ethics and substitutive methods. Thousands of animals are killed annually in schools and universities, especially in health related courses, e.g., using vivisection in anatomical and physiological studies instead of using software, movies, models and simulators. For the last decades, the questions about the ethical use of animals in education have taken a new directions, mainly with the growing objection of students and teachers to make use of these practices, and with the increasing number of institutions that chose to replace these methods by smarter techniques and responsible practices in their classes. Each and every life has its worth. Paradoxically, we live in a society where there is the idea of human superiority, in which trapping and using animals is seen as something natural, disregarding the fact that all animals are sentient beings, and therefore able to either suffer and to feel pleasure. Thus, it is necessary to discuss the ethical issues regarding the use of animals in education, with the objective of using the substitutive methods that are already available in many societies whenever it is possible..

KEYWORDS: *animal ethics; substitutive methods; vivisection; education*



106586

Investigation of field on the use of alternative methods by replacing animals in research and education

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In Brazil, at 2008, was approved the first law that specifically regulates the use of live animals in research and in practical activities, establishing rules for the use of animals in teaching, practice that has always created moral conflict in modern society, which have been discussed in the field of animal ethics. The responsibility to control the activities of teaching and research that are occurring in universities is the Ethics Committee of Animal Use (CEUAs). For the law to be respected is essential to consciously ethically correct attitude of the teachers in these institutions, as a model for the transmission of values. In this perspective, we conducted a field survey seeking to know the opinion of a group of teachers from PUCRS in health and biology on the subject as a way to subsidize the CEUA University. The research with teachers found that the subject non-human animals has been gaining ground in academia. Already one sees, as found in the findings of these investigations, the growing interest in these methods, being well accepted the idea of creating a database of alternative institutions. Researchers and teachers must adapt to the unquestionable changes of vision of our society which is demanding more robust and plausible justifications for the use of nonhuman animals in scientific research and teaching in the light of Brazilian legislation. The use of alternatives would bring new perspectives and new values to future teachers and researchers, the standards focused on replacing anthropocentrism.

KEYWORDS: *Animal Ethics; Alternative Methods; Ethics Committees to Animal Use*

106602

Alternative/Surrogate methods to the use of living animals in the State University of Feira de Santana (UEFS): needs, acknowledgments and viability

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Defending vivisection as the only technique of biological exploration in an organic and medical level is based on the (positivist) principle that only the facts that can be observed concretely and directly are the right source of knowledge (LIMA, 2008). Recently, the issue of the utilization of living animals in teaching has been much discussed in the scientific literature. Accordingly, the present study aimed for the investigation of knowledge about alternate/surrogate methods, their utilization and evaluation by students from the Health and Biological Sciences courses from the State University of Feira de Santana (UEFS), Bahia, Brazil. We used surveys for that purpose. Concerning the need of ethic discussions involving the use of animals in the scientific context in UEFS, the vast majority (94%) of students answered yes. About the reasons that possibly prevented students from questioning the use of animals for teaching purposes, the lack of other means was pointed as the primary issue. However, half the number of investigated students is aware of the existence of other techniques for teaching that don't involve the use of animals. The most popular alternate/surrogate method was the use of video (29%), followed by the use of CD-ROMs/computer simulations (24%) and plastic or synthetic models (24%). Concerning the alternatives to the use of animals on teaching already experimented by the students, 39 percent said that they already used video, 19 percent already used plastic or synthetic models, 16 percent used CD-ROMs/computer simulations, 16 percent used human beings, 14 percent used animals that died in a natural manner and 1 percent used other methods. Based on the Likert scale, 74 percent of the students agree that these alternate methods to the use of animals are viable.

KEYWORDS: *animal ethics; vivisection; humane education; methodological pluralism*



106604

Which and how many animals are used?: About the (un)controlled use of animals for teaching purposes in the State University of Feira de Santana (UEFS), Bahia, Brazil

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In Higher Education, animals have been dissected in biology classrooms since about 1900 (TRÉZ, 2000). However, the vivisectionist mentality is the one that usually prevails in the academy as a whole. The following discussions in this study come from the primary phase of a particular monographic research from the Biology Sciences course of the State University of Feira de Santana (UEFS), Brazilian northeast. This procedural and methodological phase intended to investigate which and how many living animals were involved on practical lessons and what are the objectives of their utilization in the academic-educative context of UEFS, thus involving the health and biological sciences courses, and having as a methodology the application of surveys to professors and students, as long as institutional observations. In general, the following species and/or zoological groups are used as test subjects in practical lessons: invertebrates, frogs, mice/rats, rabbits, quail and sheep. The most frequently used group by teachers is the one that includes mice/rats, followed by frogs and sheep, a similar event to the scientific literature of this matter (DINIZ et al., 2006). The intended objectives of the practical lessons vary according to the course and subject; however the majority of answers indicate that the manipulation of drugs was the most intended objective. Investigating the quantity of animals used, the vivarium has no control over the animal output, the purpose (teaching or research) and the location (classroom or laboratory) they are used. The Ethics Committee on Animal Use (CEUA), which should examine first the teaching and research procedures performed in the institution to which it is linked (Chapter III of Arouca Law, emphasis added), does not perform such determination related to the teaching practices, practically allowing an unrestricted and uncontrolled use, and conditioning the use of animals to this end to the will and (lack of) ethical principles of the professor/researcher.

KEYWORDS: *The Ethics Committee on Animal Use (CEUA); animal ethics; vivisection; humane education*

106973

Simulator applied to teaching veterinary surgical technique - asepsis and preparation of operative field

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Facing the need of a means of knowledge transmission and practical training on surgical asepsis, amid the exercise of academic teaching, we tried to develop a simulator permitting the skill acquisition and practical knowledge necessities to conduct aseptic maneuvers in real surgical procedures, minimizing therefore the risks of operative contamination and consequently refining the procedure employed in animals submitted to elective castration surgery. The presenting simulator, result of research involving the elaboration of various prototypes, was composed of two artifacts: the first formed by a mannequin manufactured from eco-leather, polyethylene laminated foam and brown plush, mimicking a dog's torso in supine position, including an articulate thoracic member. The second, manufactured from eco-leather, latex and denim workwear, simulated an operative field with surgical covering of laparotomy (surgical drapes) and dermal incision with exposition of subcutaneous cellular tissue and linea alba. This paper describes the use and acceptance of this simulator by the target public: Surgical Technique Discipline graduation students of Veterinary Medicine Course at Universidade Federal da Bahia. The conclusion is that the simulator presented a high degree of acceptance. It replaces the use of animals at the same time it promotes the appropriate support to teaching and training asepsis techniques and operative field preparation, contributing to develop surgical skills and knowledge nurturing. In addition, the simulator enabled development of surgical procedures later employed with animal test subjects.

KEYWORDS: *alternative methods; surgery; teaching*



107048

The use of animals in researches and academic studies has been massively practiced, which follows science history. The indifference of many universities against the use of animals, treating them as simple didactic resources in order to achieve pedagogical

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The use of animals in researches and academic studies has been massively practiced, which follows science history. The indifference of many universities against the use of animals, treating them as simple didactic resources in order to achieve pedagogical and scientific progress, cooperates to make students less sensitive when it comes to animal life being used through graduation course. Nowadays, many universities around the world stopped using animals in several practices, due the increasingly refusal made by students to take this kind of class, which has encouraged the introduction of alternative methodologies / effective educational approaches that substitutes this action for a more humane and ethical way. The purpose of this paper is to present alternative methodologies to the use of animals in education, such as softwares, simulators, lay figures, anatomic models, videos, etc, demystifying economic issues that assure that this methodologies are prohibitive and answering with ethics, pedagogical and scientific arguments against this practice history through civilization. After a literature review, it was noticed that anatomic models can simulate, with high precision, real animals, and the technic of conservation of corpses with Larssen solution modified, used by researches from Faculdade de Medicina Veterinária e Zootecnia de São Paulo, can replace death and hurtful usage of animals in subjects of many courses. The application of alternative methods, the questioning and the reflection about animal ethics have been increasing and must be encouraged because only then new technics will be developed, stimulating a change of cultural, philosophical and scientific paradigm which considers the animal, that is not a human being, with less value.

KEYWORDS: *Alternative Methodologies. Replace the Animal Utilization. Ethical. Demystify. Pedagogical and Scientific*

107226

Preparation of alternative teaching materials to be applied in the relation of teaching - learning in veterinary medicine

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With the rise of the concern about animal welfare, one of the major issues involved is the improper use of live animals in practical classes by using invasive procedures on them. Many schools are seeking other teaching alternatives to using live animals for teaching in higher education. The Centro de Ensino Superior dos Campos Gerais - CESCAGE is aware, especially with the issue in question and has used in the subjects of Anatomy and Physiology Course of Veterinary Medicine the practice of building functional substitute models to complete the teaching of these subjects. This activity began in 2006 and today is considered one of the methods of evaluating learning. In order to carry out the work various topics of these courses are distributed to groups of students consisting of 4 to 6 students. The students must produce a written paper on the replacement model they compete. Upon approval by the teacher the functional replacement model is built and put into place. This model should be as close to reality of the anatomical-physiological study of the animal, thus using alternative materials such as Styrofoam, clay, electrical materials etc. At the end of the semester each group presents in detail the anatomy and physiology of the systems studied to the students in their class and other invited guests of the course and will be graded by the teacher of their class. .

KEYWORDS: *substitutive model; anatomy; physiology*



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Video edition software contributions to practical lessons on veterinary surgical techniques

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Nowadays the wide range of audio-video capture equipments present on mobile phones and digital cameras permits teachers recording the practical lessons of many high education disciplines, especially veterinary surgical techniques. Use of these videos permits the simplification of contents with complex methodologies and descriptions. However, intercurrent events such as a poor positioning of the filming equipment, noises or downtime during the surgery can compromise understanding, significantly affecting the transference of contents. To solve this problems, there are video edition softwares that permit scene selection, with insertion of subtitles, illustrations and narration. These modifications would permit extracting the best of the didactic function of this media element. This paper aims to describe the necessary proceedings to produce an educational video, from capture to finalization, verifying its feasibility on veterinary surgical techniques disciplines on the Veterinary Medicine School at Universidade Federal da Bahia. This study observed that this type of software doesn't demand a deep technical knowledge, since there are many instruction manuals and tutorials on the internet. As for the use of these videos, it was verified they effectively reduced the number of living animals on demonstrative surgeries. Previous visualization of these contents on theoretical lessons generated less errors in surgical procedures on the initial phases of academic learning. Furthermore, the production of didactic videos allows the formation of a collection to consultation and support to theoretical lessons.

KEYWORDS: *alternative methods; surgery; teaching*

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“Good Cell Culture Practices”: a Theory and Practice Training Course initiative to ensure harmonization and standardization of laboratory procedures

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In vitro assays based on cell culture are very important methods that allows the replacement or reduction of animal use on toxicological tests of cosmetics and drugs. The maintenance of high level standards is essential to ensure the reliability and credibility of any results on toxicity testing. In order to reach these goals, it is essential to warrant the availability of periodical trainings owing to rationalization, standardization and harmonization of laboratory practices, adoption of quality control systems, to follows safety procedures and to generate a favorable environment for discussions on those themes. This theoretical and practical course Good Cell Culture Practices (GCCP) was a collaboration between Inmetro and BCRJ and included, at least: techniques in primary cell culture, tissue culture and maintenance of continuous cell lines, quality control for starting materials, biosafety and bioprotection, quality management systems, cell authentication, viability and purity assays. At this work, we present the program of the course and its evaluation based on the questionnaires answered by students. It was possible describe how the participants perceive the importance and necessity of training and, with a critical analysis of content by the organizing commission, it was defined policies for improving next events. This initiative may serve as an example for other similar laboratories that are expanding use of in vitro systems. Keywords: Alternative Methods, Good Laboratory Practice, Cell culture, Training, Standardization.

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Mycoplasma detection: a necessary assay for quality control of cell cultures in alternative methods

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Cells can be considered as raw material for in vitro cell cultures used in alternative assays to animal use. In this way, quality control of these cells, used for example to determine a drug cytotoxic effect, is considered essential for results guarantee. The presence of adventitious agents is the major problem to be avoided in cell cultures because of economic damages, distorted results and biosecurity risk. In order to minimize these problems in Bioengineering program laboratories at INMETRO, it was implemented a routine of raw material quality control aiming a future adhesion to quality management systems as Good Laboratory Practice (GLP) or ISO 17025:2005. Some providences as equipments routine cleaning, environment higienization and personnel training has been taken. Beyond that, each batch of cell culture media, solution or cells have been routinely tested for the presence of bacteria, fungi and micoplasma using, respectively, cultivation in agar Casoy (35 °C), in agar Sabouraud (25 °C) and MycoAlert® Mycoplasma Detection Kit techniques. During these first 8 months, no contamination of the cell media or solutions were detected. Meanwhile, six episodes of mycoplasma detection had occurred by thawing old contaminated stocks or eventual contamination by operator. This work shows the importance of the constant monitoring to prevent mycoplasma contamination of cell cultures..

KEYWORDS: *Mycoplasma; cell culture contamination; quality control*