bridges peptide with an ICK structural motif that consists of a cysteine knot with a triple-stranded beta-sheet. Since PaluIT1 do not recognized mammalian's receptors, it could be employed in binding studies to characterize insect receptors. In addition by labeling the toxin together with specific directed antibodies, it may be employed to clarify relationships between such a ligand and the insect receptor site. Insect-selective neurotoxins such PaluIT1 are not harmful to humans and have the potential to be used to develop bio-insecticides; however, they have to be produced in sufficient amounts first. There are several methods to produce them; however, heterologous expression in bacterial cells would be of increased production but it could be a challenge because of the amount of disulfide bridges to be correctly folded, even though some toxins have been expressed in baculovirus, yeast and bacteria.

Methods: To get sufficient amount of a PaluIT1, a cDNA was constructed and cloned into the expression vector pQE30 containing a 6His-tag and an FXa proteolytic cleavage region. This recombinant vector was transfected into *Escherichia coli* BL21 cells and expressed under induction with isopropyl thiogalactoside (IPTG). Moreover, a tandem construction of PaluIT1 (two PaluIT1 cDNA linked with appropriate nucleotides were inserted for R, 5 G and a S residue to cut expressed toxins), similar plasmids were designed to improve peptide expression and six different primers were constructed to perform tandem construction by PCR.

Results: Several problems associated with the heterologously expressed toxins containing four disulfide bridges are discussed. *Escherichia coli* BL21 frequently mutes the TATAAT sequence inhibiting toxins production, plasmid construction must be sequenced in both directions to correct this problem. The His-tagged recombinant toxin was found exclusively in inclusion bodies. Reduced yields were obtained after oxidation reaction to fold the toxins. To avoid inspecific hybridization of cDNA on tandem construction short specific primers, are required.

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Keywords: Heterologous expression, insecticidal spider toxins
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P. Systems & Training

274. A National Serum Depot in the Netherlands; Encountered Antivenom Purchase Difficulties

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Background: Since 2008, a National Serum Depot (NSD) is operational in the Netherlands, guaranteeing antivenom supply during medical emergencies. The NSD is organized by the National Institute for Public Health and the Environment (RIVM), in cooperation with the Dutch National Poisons Information Center (NPIC). The NPIC makes recommendations concerning the content of the National Serum Depot and advices physicians on medical treatment including use of antivenoms. The RIVM is responsible for purchase, storage and delivery of the antivenoms. During establishment and maintenance of the NSD several antivenom purchase difficulties are encountered.

Materials and Methods: Like in many countries, antivenoms are not registered in the Netherlands. There is a permission given by the Netherlands Health Care Inspectorate (IGZ) to the RIVM to purchase, import, store and distribute the antivenoms. Because antivenoms are pharmaceutical products, these activities are performed according to the guidelines of Good Distribution Practice (GDP).

Results: It is a time consuming process to locate and establish a good relationship with the antivenom producers. Some antivenom producers do not respond upon (initial) contact. Others have an international sale embargo because of their code of ethics. A main problem is the availability of antivenoms. Regularly, there are temporarily market failures or the products have only a very short shelf life left from the moment of purchase. Some products arrived in bad shape and did therefore not comply with the guideline of GDP leading to the destruction of the product. The package and even the information leaflet of some antivenoms are only available in the local language like Thai, Chinese or Spanish and not in English. In extraordinary cases the information on the leaflet was incorrect.

Discussion and Conclusions: In order to have sufficient supply during medical emergencies, the establishment of good working relationships with the producers must be taken seriously. To improve the antivenom market, antivenom producing companies must apply to the WHO Guidelines for Production Control and Regulation of Snake Antivenom Immunoglobulins and the general Guideline of Good Manufactory Practice and Good Distribution Practice. Sharing information between various antivenom depots is important to improve the purchase process.

Keywords: Antivenom supply, antivenom market, GxP (GMP and GDP), antivenom acquisition
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275. Safe Utilization of Ketamine as a First Line Induction Agent for Rapid Sequence Intubation (RSI) in the Aeromedical Setting

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Background: Ketamine is a derivative of PCP that acts as a dissociative anesthetic. It has a number of benefits as an anesthetic and in terms of its effects on the physiology of critically injured patients in the prehospital setting requiring RSI.

Objectives: To show that ketamine can safely be used as a first line induction agent for RSI in hypotensive to normotensive patients requiring aeromedical transport.

Methods: Retrospective case series over 6 month period following the introduction of ketamine into aeromedical protocols.

Results: 7 of 18 patients in the case series received ketamine as an induction agent. 100% percent of patients receiving Ketamine avoided hypotensive sequelae. 0% developed hypertension or other adverse effects. Vitals and end tidal CO2 improved in all patients receiving ketamine.

Conclusions: Ketamine was a safe and beneficial alternative to existing induction agents in hypotensive trauma patients being transported by air.

Keywords: Ketamine, aero-medical, RSI
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276. Circus Venomous: An Interactive Tool for Toxinology Education

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Background: Clinical education about envenomations and their treatment may convey clinical and zoological details inadequately or flatly. In recent years, the widespread availability of models and videos of venomous species have created unique opportunities for toxinology education. We share our experiences using a new toolkit for educating a diverse array of clinicians, students, and wilderness medicine enthusiasts.

Methods: We examined the cost, number of participants, and satisfaction data since the initiation of a portable workshop featuring high-fidelity exhibits of venomous species. Termed the "Circus Venomous," this educational toolkit consists of several boxes of props, such as plastic models, photos, and preserved specimens of injurious species (see Table).

The workshop consists of three phases: 1.) participants view all exhibits and answer clinical questions regarding venomous injuries; 2.) short video clips from television and cinema are viewed together, and myths about envenomation injuries are debunked; 3.) debriefing session and wrap-up.

Results: We have utilized the Circus Venomous to teach medical students, residents, practicing community clinicians, nurses, PAs, national and regional parkmedics, and wilderness enthusiasts. The major cost (about $800) was spent on the purchase of highly durable, lifelike models and well-preserved real reptile and arachnid specimens. When formal feedback was solicited, the participants expressed high levels of satisfaction, scoring an average of 4.3, 4.4, and 4.3 out of 5 points in the respective areas of content, presentation, and practical value of the activity. Since we have used this exhibit with approximately 250 participants over 2 years, we estimate the materials cost per participant is approximately $3.

Conclusions: The Circus Venomous is a novel, interactive, flexible, and cost-effective teaching tool about envenomation emergencies. We hope that this concept will encourage other clinical educators towards further innovation. Future directions for our group include greater inclusion of marine species into the Circus Venomous, and formal longitudinal testing to measure knowledge retention based on this approach.

Fig. 1.

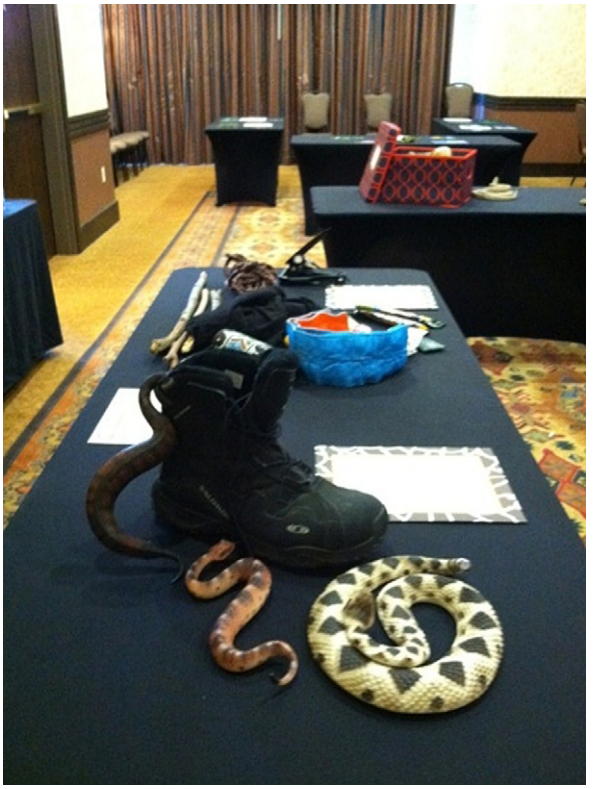

Fig. 2.