P08-019
Lipid nanoparticles as carrier systems for Ivermectin and Methoprene aiming veterinary applications

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The study of the characteristics and applications in nanoscale structures began to take a keen interest of researchers in the medical, environmental and agricultural areas in special as nanocarrier systems. The purpose of applying nanocarriers such transport systems is to improve the bioavailability of veterinary active compounds and reduce toxicological effects caused by them, enabling combating endo- and ectoparasites causing great damage to agriculture without damaging the environment. Also these systems can improve and produce alternatives to the use of these compounds for applications in veterinary. In this way, the aim of this study was to prepare and characterize the lipid nanoparticles (such as solid lipid nanoparticles and nanostructured lipid carriers) as carrier systems for ivermectin and methoprene aiming future applications of theses systems in livestock. The preparation of carriers is based on the method of emulsification-solvent evaporation. After the nanoparticle preparation these systems were characterized by the measurements of mean size diameter, polydispersity, zeta potential and morphological analysis made by transmission electron microscopy. The initial results showed the formulations have a high encapsulation capacity (above 99% for both drugs), and the nanoparticles were stable over 120 days. Transmission electron microscopy showed that all nanoparticles are spherical and do not present aggregates. The results indicate that nanoparticles showed good colloidal characteristics and the presence or absence of active do not provoke changes in the characteristics of the lipid nanoparticles. In this way, these initial results opens perspectives to the use of theses lipid nanoparticles as carrier systems for ivermectin and methoprene aiming veterinary applications in order to increase the bioavailability and reduces the harmful effects to the environment.

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P08-020
Effects of multi-walled carbon nanotubes on the pneumonia in respiratory syncytial virus-infected mice

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Multi-walled carbon nanotubes (MWCNT) have a wide range of applications. But their safety for human health is poorly known. To reveal the effects of MWCNT on the immune response, a respiratory syncytial virus (RSV) infection mouse model was used. MWCNT (40-50 nm in diameter and 3.3 μm in length) was used in this study. The RSV infection test was performed as reported previously (Hashiguchi et al., 2015). Briefly, female (6 weeks old) BALB/c mice were intranasally exposed to MWCNT (0–0.25 mg/kg of body weight) under anesthesia. After 5 days, these mice were intranasally infected with $3.5x10^5$ PFU of RSV under anesthesia. The levels of CCL3 (MIP-1 alpha), one of the representative markers of pneumonia, in the bronchoalveolar lavage fluids of RSV-infected mice were significantly ($P<0.05$) increased due to MWCNT exposure compared with the control. The pulmonary viral titers were not influenced due to MWCNT exposure, assayed by plaque method. Histopathological analysis for lung tissues showed that typical features of pneumonia due to RSV infection, such as degeneration of the bronchial epithelium and infiltration of lymphocytes and neutrophils, were observed in mice treated with or without MWCNT. Then, the infiltration of lymphocytes and neutrophils in alveolar septa was increased due to MWCNT exposure compared with the control. To investigate whether the distribution of RSV-infected cells was changed qualitatively due to MWCNT exposure, sections of the lung tissues of RSV-infected mice were stained immunohistochemically with a goat-polyclonal antibody against RSV protein. Although, there was aggregation of MWCNT near inflammatory cells, we could not observe any RSV-positive cells in the severely affected region. Thus, we confirmed exacerbation of the pneumonia due to MWCNT exposure in RSV-infected mice.

Reference

Hashiguchi, et al., 2015. Environ. Toxicol. Pharmacol. 39, 879–886, http://dx.doi.org/10.1016/j.etap.2015.02.017.

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P08-021
Risk assessment of silver nanomaterials in the food industry: Regulatory and scientific challenges

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In the context of the increasing use of nanomaterials (NMs), risk assessment is a serious challenge for industry and regulatory authorities. Silver nanoparticles (Ag NPs) are NMs that may be included as components of food contact materials or may be used directly in food, due to their antimicrobial properties. The aim of this study is to assess the relevance of physicochemical (PC) and toxicological guidelines and the available data for the evaluation of the safety of Ag NPs in the context of food and food contact regulations. PC characterisation is fundamental to properly conduct and assess toxicity tests. Particle size, surface area or sample preparation are among key factors required to assess the toxicity of NMs. To date, the literature displays many different characteristics for Ag NPs based on both their intrinsic properties and their different reactivities according to the biological medium. Therefore, no single PC profile can be deduced and no toxicological pattern can be anticipated. Moreover, some important PC data cannot be generated due to the non-applicability of test guidelines. Ag NPs released from food packaging or directly added to food could be ingested. According to EFSA, the minimum requirements for ingested NMs should include data from repeated-dose toxicity studies and appropriate *in vitro* studies (*e.g.* genotoxicity), on the basis of NMs toxicokinetics. Based on the literature, it seems that Ag NPs may induce