systemic humoral and cell-mediated immune responses, hold promise as a vaccine candidate for preventing SARS-CoV-2 and variants infection.
Keywords: nanoparticle-based DNA, vaccine, COVID-19
Supported by: CNPq, PRPq-UFMG, CAPES and FAPEMIG

08878 - Poster Session

CD.28 - Nanostructured lipid carriers prepared with olive oil shows anti-inflammatory activity, as seen in zebrafish acute inflammatory model

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INTRODUCTION
Oleocanthal, a component of olive oil, has a poor bioavailability but anti-inflammatory properties comparable to those of ibuprofen. Nanostructured lipid carriers (NLC) are drug delivery systems composed of a blend of solid and liquid lipid stabilized by surfactants; they are able to encapsulate insoluble drugs, increasing their bioavailability. In here, olive oil was used as the liquid lipid of NLC stabilized with Pluronic F68 (NLC-OO-P) or Tween 80 (NLC-OO-T). The characterization of these particles revealed for NLC-OO-P: size= 236.4 ± 0.5 nm, polydispersity index (PDI)= 0.163 ± 0.03, zeta potential (ZP) = -31.5 ± 0.7mV and 6.08 ±0.70 x 10∧13 particles/mL. For NLC-OO-T: size = 225.7 ± 0.6 nm, PDI = 0.205 ± 0.02, ZP= -22; 26.5 ± 0.1mV and 4.90 ± 0.21x10∧13 particles/mL.
OBJECTIVES
The aim of this work is to verify the anti-inflammatory activity of these nanoformulations.
MATERIALS AND METHODS
Zebrafish larvae (5 days after fertilization, dpf) were used to determine drug absorption through the intestinal mucosa, with both formulations. In the two cases, the lethal dose was >1012 particles/mL. In a well stablished acute inflammation model, which involved caudal fin transection of the 5 dpf Tg (BACmpx:GFP)i114 larvae, the animals were incubated in suspensions with the different NLC formulations for 1 h prior to the caudal fin transection. Neutrophils recruitment to the affected area was analyzed at 3 hours post-damage.
DISCUSSION AND RESULTS
The results obtained for the control group showed an average of 15 neutrophils infiltrated in the damaged zone. The number of neutrophils decreased to 8 and 6, for NLC-OO-P and NLC-OOT, respectively. These results demonstrate that NLC prepared with olive oil have a significant anti-inflammatory effect. In addition, the different surfactant composition did not interfere with the anti-inflammatory activity of the oil.
CONCLUSION
Thus, the use of olive oil as a functional excipient is an interesting approach to achieve anti-inflammatory activity in pharmaceutical formulations.
Keywords: drug delivery, nanostructured lipid carrier, anti-inflammatory effect
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08561 - Poster Session

CD.29 - Evaluation of structural changes of benzocaine-loaded, optimized nanostructured lipid carriers using SANS and Raman imaging approaches

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INTRODUCTION
Local anesthetics are substances that reversibly block the nerve-impulse conduction, alleviating pain without loss of consciousness. Benzocaine, a poorly soluble local anesthetic, is an ester of para-aminobenzoic acid. Several strategies of formulations can be used to improve bioavailability and decrease adverse effects of benzocaine. In this study nanostructured lipid carriers (NLC) were employed. These lipid-based drug delivery carriers have a lipid core composed of a blend of solid and liquid lipids, and a shelf of non-ionic surfactant.
OBJECTIVES
The main aim of this work was to optimize benzocaine-loaded NLC and to investigate structural changes in these nanoparticles, under different temperatures.
MATERIALS AND METHODS
The ratio of excipients (cetyl palmitate, Capmul® PG-8 NF and Pluronic®F68) and benzocaine in the NLC was optimized using a 2^3 factorial design with respect to the following parameters: particle size, polydispersity index (PDI) and zeta potentials.
DISCUSSION AND RESULTS
The interactions between the factors were found relevant to determine particle size and PDI. Using desirability function, the best formulation conditions were found. Structural changes in optimized NLC were observed with Small-Angle Neutron Scattering (SANS) and Raman imaging, in samples at 27, 37 and 40º C. SANS pointed the formation of lamellar structures inside the NLC, which interlamellar distances increase at higher temperature. Raman imaging showed that the incorporation of P68 and benzocaine in-between the lipids increased at higher temperatures, explaining the changes in Q values (SANS).
CONCLUSION
This work shows how different scattering techniques can provide complementary information and be used together to characterize and understand the physical, chemical, and structural changes on the organization of pharmaceutical carriers in drug delivery system.
Keywords: factorial design, local anesthetic, pharmaceutical formulations
Supported by: FAPESP, CNPq, CAPES, Niels Bohr Fond and Carlsberg Foundation

08901 - Poster Session

CD.30 - Docetaxel-loaded lipid nanoparticles prevent the growth of murine melanoma

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INTRODUCTION
Melanoma is the most aggressive type of skin carcinoma. Considering its low response and resistance to chemotherapy, nanotechnology brings