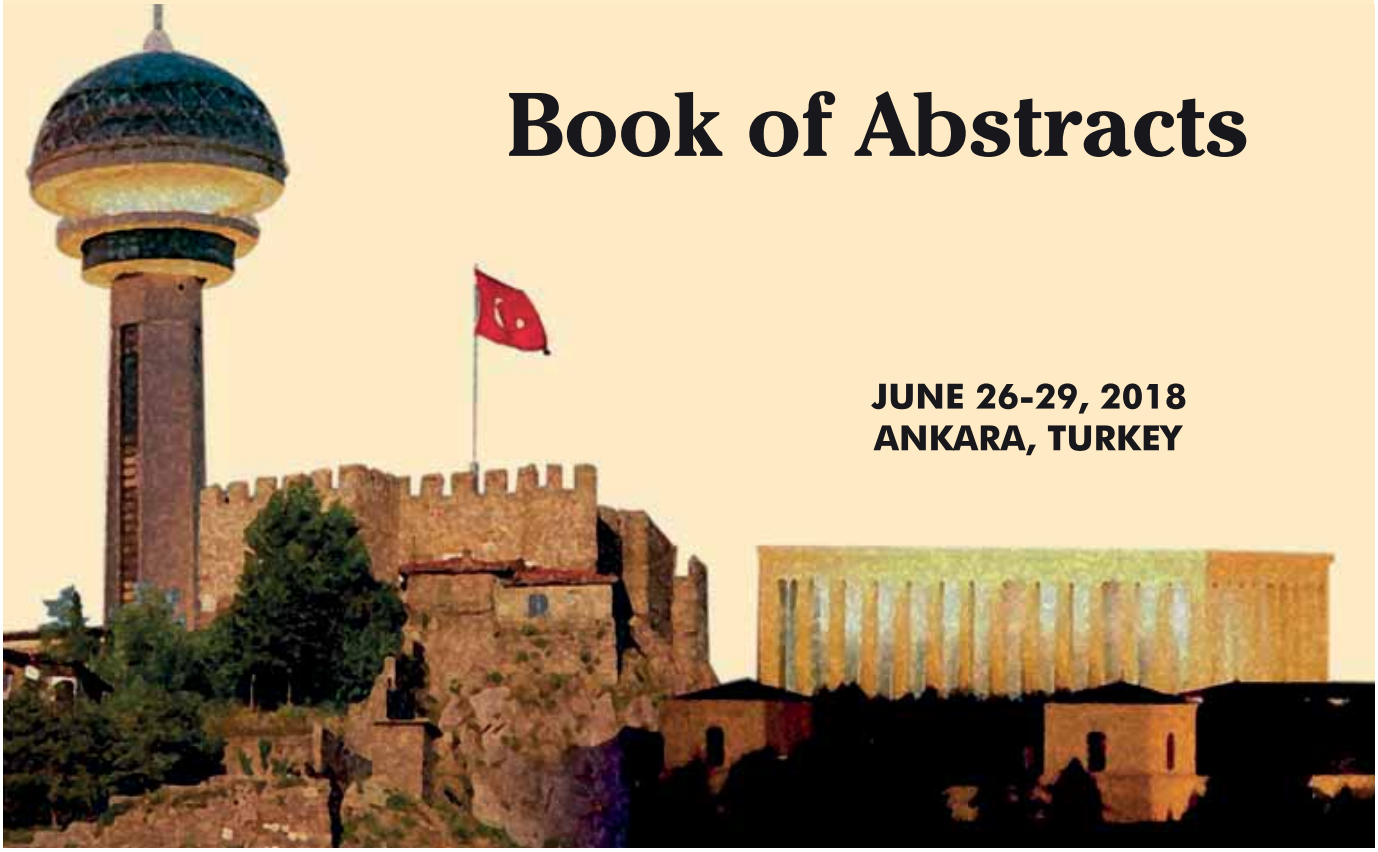
ANKARA UNIVERSITY
FACULTY OF PHARMACY

# ISOPS 12th International SYMPOSIUM ON PHARMACEUTICAL SCIENCES

# Book of Abstracts



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**MATERIALS AND METHODS:**

Cells were grown in conventional cell culture conditions and fed with DMEM medium containing 10%FBS at 37 ℃ as, in a 5%CO2 incubator.The intervals were controlled by phase contrast microscopy. AuNP, vitaminE-SLN, Glycoin and trehalose(as cryoprotectant) were examined by MTT cell viability assay in NIH/3T3-cells for 24-hours, separately and in combination (2).The formulation was produced by melting/fusion-method. AuNP, vitaminE-SLN, Glycoin and trehalose were added according to the data of cell culture studies. SLN was prepared by hot homogenization followed by high shear mixing.

**RESULTS:**

The size of SLN was 647.5nm±16.2;zeta potential was -27.8±2.71mV and polydispersity index was 0.4.Cell viabilities were examined for toxicity and IC50 value by using cell culture studies for Glycoin as first step. Formulation experiments containing Glycoin in different ratios were evaluated and the ideal was determined(2%).Formulation experiments with Trehalose-added-SLN at different ratios and SLN-without-vitaminE, vitaminE-SLN and vitaminE-alone were examined and the effect on the formulation was observed.The significant positive effects of vitaminE-SLN and 1%(w/v)trehalose on cell viability were determined.Formulation experiments containing AuNP were evaluated the ideal value was determined,keeping the 2%Glycoin content constant(AuNP0.0025%(w/w)).The final formulation, which was optimized by cell culture, was compared. The proliferation of the final formulation obtained was 227.2%.

**CONCLUSIONS:**

In this study, synergistic effect was observed by taking advantage of the natural and biocompatible ingredients of the formulation, which was proven by the cell culture.The proliferation effect was obtained by vitaminE- loaded SLNs as well as by the effect of the gold-nanoparticles and Glycoin.The ratio of the ingredients was screened by their effect on cell proliferation and the final formulation enhanced the viability up to 227.2%. According to the studies carried out gold-nanoparticles, vitaminE loaded SLNs and Glycoin is a promising formulation because of its unique structure in the field of lip care.

**ACKNOWLEDGEMENTS:**

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2. Re R, et al., (1999) Free Radic Biol Med, 26:7-1231.

## P-363: PREPARATION AND IN VITRO CHARACTERIZATION OF CARVEDILOL LOADED POLYMERIC NANOPARTICLES FOR DRUG DELIVERY

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**INTRODUCTION:**

Nanoparticles are one of the multiparticulate delivery systems and are prepared to improve bioavailability or stability (1). The object of the study was to formulate and characterize Eudragit® Nanoparticles containing carvedilol by determining their size and zeta potential, their external morphology for the treatment of hypertension.

**MATERIALS AND METHODS:**

Carvedilol loaded polymeric nanoparticles were prepared by Spray Dryer (Spray-Dryer B-90, BÜCHI, Switzerland) (2). The polymeric nanoparticles were characterized by a Zetasizer Nano ZS (Malvern Instruments, UK). The morphology of the nanoparticles were determined with a scanning electron microscopy. Interaction of drug with the polymers were determined by XRD and FT-IR.

**RESULTS:**

Particle size data showed submicron size with low polydispersity. The studies showed that carvedilol loaded particles have considerably high zeta potentials (Table 1). XRD and FT-IR analyses showed that neither active agent nor polymeric structure were affected from the production parameters.

Table 2: Particle size, zeta potential and PDI of carvedilol-loaded polymeric nanoparticles

| Code | Particle Size (nm) | Polydispersity Index (PDI) | Zeta Potential (mV) |
|---|---|---|---|
| CL-P | 418.2±18.5 | 0.4±0.02 | 40.1±1.1 |
| CS-P | 402.3±22.0 | 0.5±0.01 | 42.3±1.4 |
| CSL-P | 416.3±12.5 | 0.5±0.07 | 42.4±1.5 |
| CL-1 | 535.5±13.8 | 0.4±0.07 | 41.2±.1.3 |
| CS-1 | 529.4±10.2 | 0.5±0.06 | 40.6±2.4 |
| CSL-1 | 530.4±10.4 | 0.6±0.02 | 40.6±2.3 |

**CONCLUSIONS:**

The carvedilol loaded polymeric nanoparticle systems developed in this study represent a promising safe system for the sustained and controlled delivery of carvedilol. The developed formulation is suitable, and represents a promising system for the sustained delivery of carvedilol to target cells, tissues and organs.

**REFERENCES:**

1. Kalimutu S, Yadav AV (2009). International Journal of PharmTech Research, 1(2): 179-183.
2. Sahoo J, Murthy PN, Biswal S (2009). AAPS Pharm Sci Tech, 10(1): 27-33.

## P-364: IN VITRO RELEASE STUDIES AND HPLC METHOD FOR THE DETERMINATION OF CARVEDILOL IN NANOPARTICLE SYSTEMS

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**INTRODUCTION:**

Nanoparticle systems are one of the multiparticulate delivery systems and are prepared to improve bioavailability or stability (1). Many advantages of nanoparticle-based drug delivery have been recognized. In vitro drug release studies are important and this studies help in evaluation of sustained and prolonged release dispersion systems (2). In this study, carvedilol loaded polymeric nanoparticles are determined of drug entrapment efficiency and characterized for in vitro release studies.

**MATERIALS AND METHODS:**

Entrapment efficiency was estimated by using the HPLC method. In vitro drug release of carvedilol from polymeric nanoparticles were studied through dialysis bag membrane. The temperature was maintained at 37 ± 0.5°C under sink conditions.

**RESULTS:**

The HPLC method developed was validated for precision, accuracy, specificity and linearity for carvedilol. HPLC conditions are shown in Table 1. Carvedilol loaded nanoparticle formulations were analyzed for entrapment efficiency by HPLC. The in vitro release studies indicated that, although there was an important burst release of the drug in 1 h, it continued in a sustained release way for 48 h.

Table 1. Chromatographic conditions

| | |
|---|---|
| Stationary Phase | InertSustaine® column (4.6mmx150 mm, C18 Gravity, 3 µm) |
| Mobile Phase | 0.03M potassium dihydrogen phosphate (pH 3.0) buffer: acetonitrile: methanol (60:50:10, v:v:v) |
| Oven Temperature | 40 °C |
| Flow Rate | 0.5 mL/min |
| İnjection Volume | 20 µL |
| Detection Wavelenght | 242 nm |

**CONCLUSIONS:**

This developed HPLC method was also successfully applied for the determination of carvedilol in polymeric nanoparticle formulations, encapsulation efficiency and in vitro release study. The developed formulation is suitable, and represents a promising system for the sustained delivery of carvedilol.

**ACKNOWLEDGEMENTS:**

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## P-365: DEVELOPMENT AND IN VITRO / IN VIVO EVALUATION OF BISPHOSPHONATE LOADED MEMBRANES FOR GUIDED BONE REGENERATION

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**INTRODUCTION:**

The aim of this research is utilization of membrane formulation as a barrier material for guided bone regeneration (GBR). The principal idea was developing a biodegradable barrier material preventing soft tissue migration through defect area during bone formation period and promoting osteoblast cells activity with minimized dose of Zoledronic Acid (ZA).

**MATERIALS AND METHODS:**

Membranes were prepared by polymer solution casting and evaporation. During the process, various amounts of PDLA, TEC, Pluronic F-127 and ZA were dissolved respectively in 5 mL of acetone and poured onto PTFE mold. Afterwards, solvent was evaporated at 37°C during 24 hours.

The morphology of membrane was observed using scanning electron microscopy (SEM) with acceleration voltage of 10kV.

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