IMPACT OF THE NEW DERIVATIVES OF POLYISOPRENOID ALCOHOLS –NEW COMPONENT OF DRUG CARRIERS - ON RENAL MORPHOLOGY AND MORPHOMETRIC ANALYSIS OF MALE SPRAGUE-DAWLEY RATS

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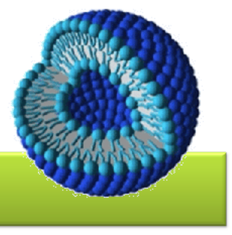
INTRODUCTION AND AIMS

In treatment of many diseases serious side effects of drugs are a major problem, which physicians and patients are forced to deal with. Beside searching for new active substances, seeking for substances improving already existing drugs seems to be good strategy. Reducing harmful effects of drugs could be accomplished by providing faster drug passing through the biological membranes, so the active substance would reach faster its destination. New derivatives of polyisoprenoid alcohols, called amino-prenols, were proven to possess such lipofecting properties. In this study we investigate if these compounds do not *per se* cause untoward effects on the living organism so they can be used as components of liposomal drug carriers.



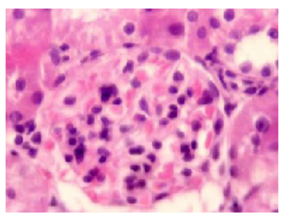
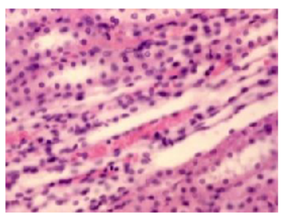
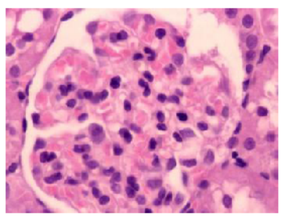
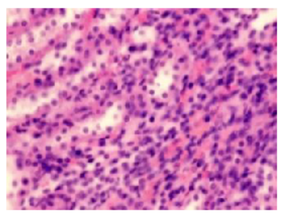
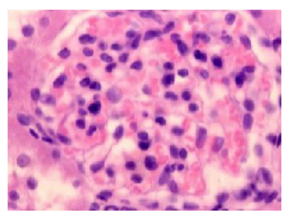
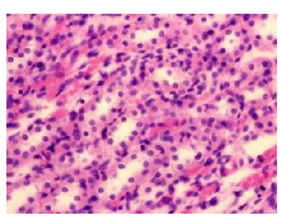
METHODS

Male Sprague–Dawley rats received daily, subcutaneous injections (0,5 ml) of liposomes built of dioleoyl phosphatidylethanolamine (DOPE) (L, n=13), liposomes built of DOPE and amino- prenols (ratio 10:1)(L+P, n=13) or water solvent (W, n=12).

After four weeks of treatment heart and kidneys were harvested for histological and morphometric analysis.

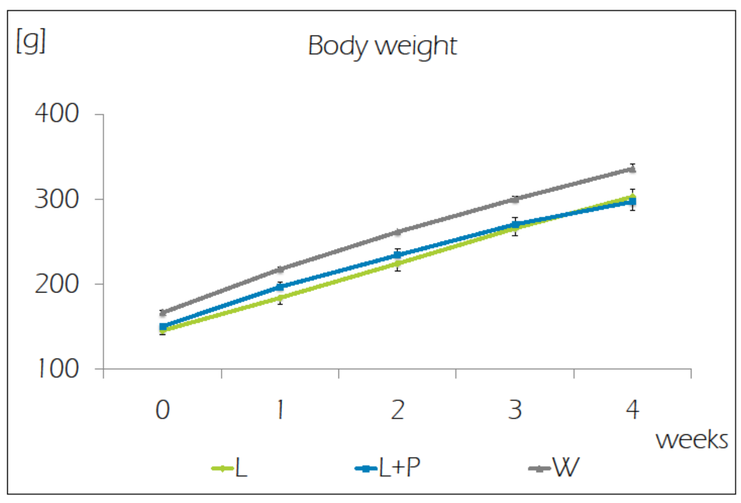
RESULTS

Renal tissue slices stained with hematoxylin-eosin did not indicate explicit signs of kidney damage in all groups; inter-group differences in the microscopic images of the renal cortex and medulla were not observed.

	Cortex	Outer medulla
L		
L+P		
W		

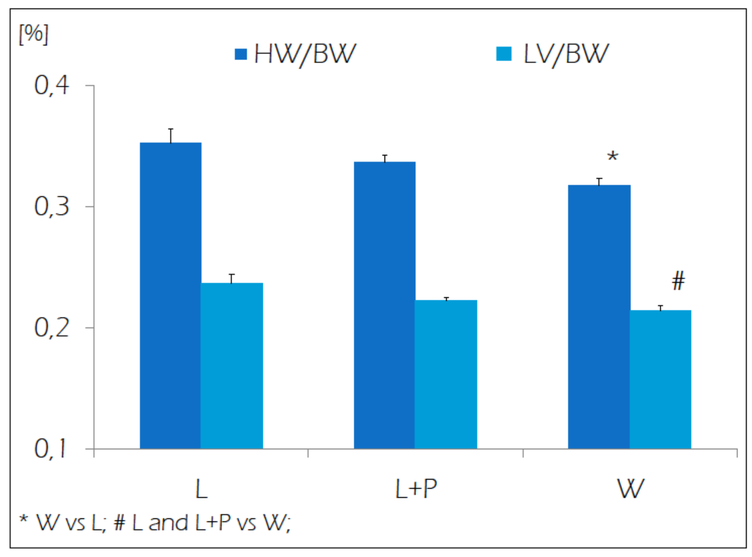
RESULTS

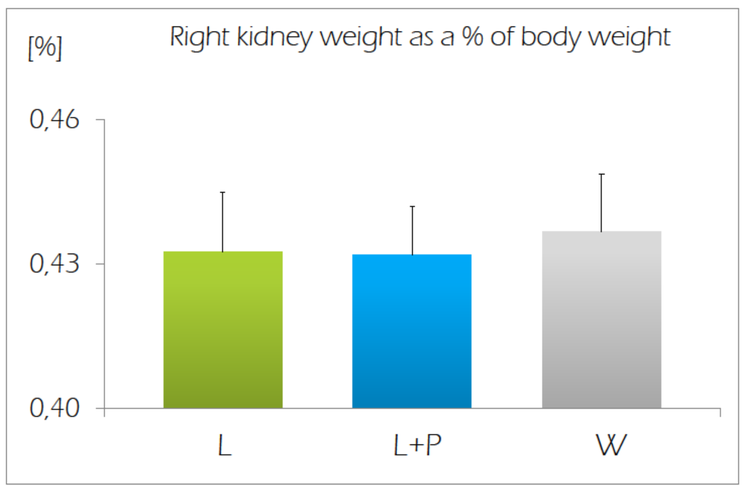
During four weeks all animals were characterized by good health and activity. Urinary albumin excretion (UAE) were in the normal range for Sprague-Dawley rats in all groups; only in W group significant increase in UAE after 4 weeks was observed (from 0.23±0.07 to 0.55±0.14 mg/day; $p<0.05$).



The increase of the body weight was almost parallel in all groups. When expressed as per cent of the starting weight value, the curves for L, L+P and W groups were superimposable;

Heart weight – to – body weight ratio (HW/BW) for W group was significantly different from both groups receiving liposomes (L and L+P, $p<0.05$); Left ventricular – to – body weight ratio (LV/BW) was the highest in the L group and significantly different from W. The values for L and L+P groups were not significantly different;





Kidney weights expressed as a percent of body weight were nearly identical in all groups; no statistically significant diferences were observed;

L – liposomes; L+P - liposomes with amino-prenols; W – water;

CONCLUSION

Morphology and morphometric analysis showed no negative changes in renal structures caused by tested compounds, therefore we find them suitable as a component of liposomal drug carriers

Supported by grant No. UDA-POIG.01.03.01-14-036-09