



New biodegradable nanoparticle systems for the treatment of chronic lymphocytic Leukemia and lymphomas

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Nonviral delivery systems are relatively easy to produce in the large scale, are safe, and elicit a negligible immune response. Nanoparticles (NPs) offer promise as nonviral vectors as biocompatible and -degradable carriers of drugs with targeting capacities to specific cell sites by surface receptors of monoclonal antibodies (mAbs). We present the effect of Biodegradable NP systems on drug-resistant B-chronic lymphocytic leukemia (B-CLL) cells in vitro, encapsulating the drug, hydroxylchloroquine (HDQ), with NP surface coatings of specific Monoclonals Antibodies such as the anti human CD20 mAb, Rituximab. Our data indicate that these nanoparticles with surface mAbs are suitable for selective drug delivery to B-CLL cells and other lymphoma cell lines, producing a strong apoptotic effect when loaded with the lysosomotropic agent, HDQ. We also evaluated their toxic and therapeutic effects on a Human/Mouse Model of Burkitt Lymphoma, adding this time Chlorambucil to the system. We found that Rituximab-Chlorambucil-Hydroxylchloroquine BNPs induce a decrease in cell viability of malignant B cells in a dose-dependent manner. The mediated cytotoxicity resulted from apoptosis, and was confirmed by monitoring the B-CLL cells after Annexin V/propidium iodide staining. Additional data revealed that these BNPs were non toxic for healthy animals, and had prolonged an outstanding survival in this mice model of human lymphoma.

Biography

Prof. Eduardo Raúl Mansilla is a Medical Doctor graduated from the School of Medicine of the National University of La Plata, Argentina, in 1979. Senior Specialist in Internal Medicine. Professor of Internal Medicine of the School of Medicine, National University of La Plata Argentina. Former Vice Director Spanish Hospital La Plata Argentina. Vice President Argentine Federation of Internal Medicine (FAMI). Former President, La Plata Society of Internal Medicine. Former President, La Plata Society of Cancerology. Former Coordinator Argentine Diabetes Society Immunology and Genetic Committee. Director, Laboratory of Tissue Engineering, Regenerative Medicine and Cell Therapies of CUCAIBA La Plata Province of Buenos Aires Ministry of Health Center of Procurement and Transplantation of Organs. First Prize Argentine Haematology Society 2007 for the Research Paper " Biodegradable Nanoparticles with Chlorambucil and Hydroxylchloroquine for the Treatment of Chronic Lymphocytic Leukemia".