Diffuse large B cell lymphoma (DLBCL) in vitro model based on a newly synthetized chitosan/gelatin hydrogel

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Diffuse large B cell lymphoma (DLBCL) is the most common non-Hodgkin lymphoma, accounting for 30% of diagnoses worldwide. The advances in molecular biology techniques have been fundamental to achieve maximum understanding of DLBCL pathophysiology, but conventional 2D cell culture and mice models are not representative of the in vivo physiology. 2D cultures do not mimic growth profiles and cellular organization observed in vivo and lack the heterogeneity of tumor microenvironment (TME). Consequently, extracellular matrix (ECM) analogues can be designed to provide cells with a 3D structure and obtain a more faithful representation of the TME. In this work a chitosan/gelatin-based hydrogel has been developed to provide lymphoma cells with a 3D structure and obtain a more faithful representation of the TME. U2932 lymphoma cells have been encapsulated in the hydrogel, alone or in combination with WPMY-1 stromal cells, showing high viability by live/dead assay. Furthermore, co-culture studies showed the formation of cell spheroids after three days of culture, with respect to U2932 cells encapsulated alone. Based on these results, this hydrogel represents an excellent candidate for establishing a 3D in vitro model of DLBCL.