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## Comparison of linear poly ethylene imine (LPEI) and poly l-lysine (PLL) in fabrication of CHOK1 cell-loaded multilayer alginate microcapsules

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Poly l-lysine (PLL) has been introduced as a strengthening covering layer for alginate microcapsules which are the most convenient way for cell encapsulation. Some disadvantages of PLL such as high price, low biocompatibility have made scientist to find better alternatives to it. Linear poly ethylene imine (LPEI), due to its highly similar structure to PLL, could be considered as a proper cost-effective alternative. In this study LPEI and PLL as covering layers of cell-loaded microcapsules (cALA/cAPA) were compared. In addition to the physico-mechanical properties, the encapsulation efficiency, cell survival post encapsulation, cell viability and cellular metabolic activity within the microcapsules were evaluated using trypan blue, live/dead cell staining and MTT test, respectively. Physico-mechanical evaluation of the microcapsules revealed that the cell microencapsulation process did not affect shape, size and mechanical stability of them. Although the encapsulation efficiency for cALA and cAPA was not different ( $P>0.05$ ), cell survival post encapsulation was higher in cALA than cAPA ( $P<0.05$ ) which could be the reason for the higher cell viability and also cellular metabolic activity within these microcapsules in comparison to cAPA. Here, based on these results ALA could be introduced as preferable alternative to APA for cell encapsulation.