HYBRID pH-SENSITIVE NANOPARTICLES AS PLATFORMS FOR DELIVERY OF CURCUMIN

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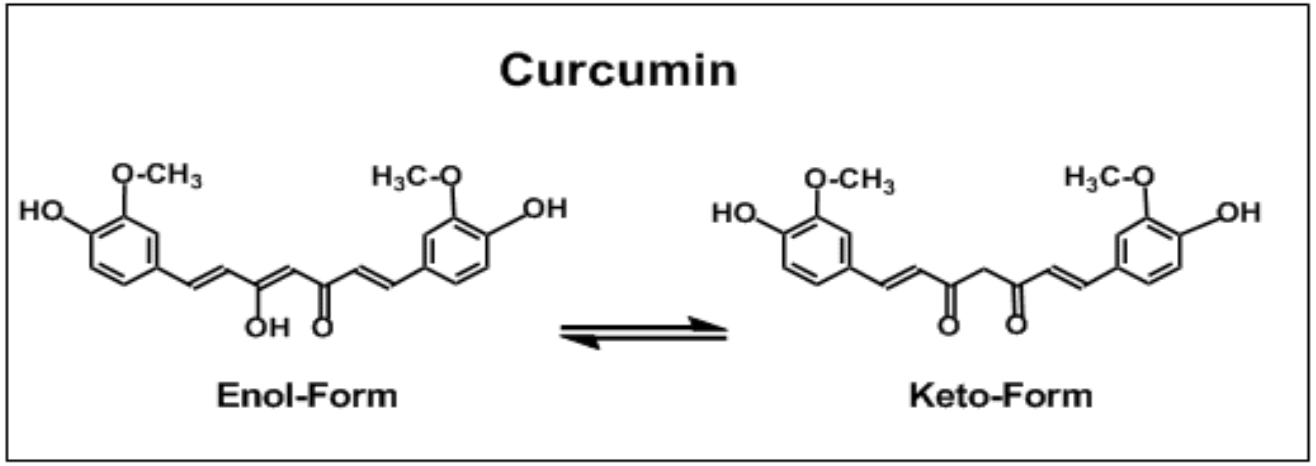
Introduction



- Pleiotropic antineoplastic activity
- Without toxicity to normal cells

Disadvantages

- Poor aqueous solubility (11ng/ml)
- Instability in physiological pH
- Low bioavailability

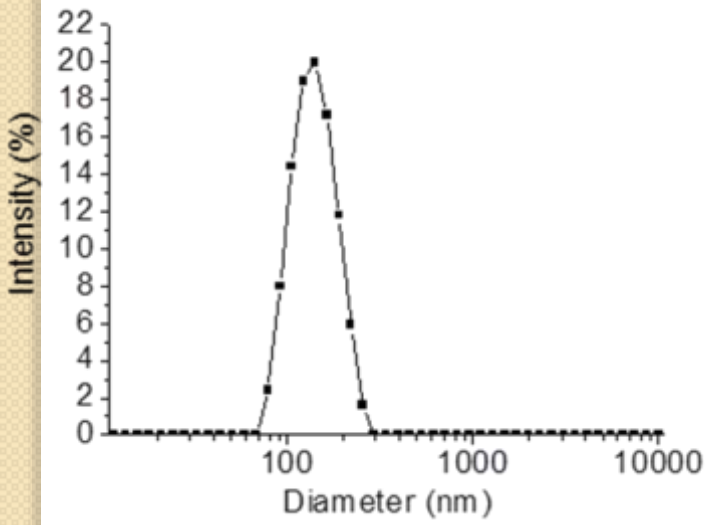
Approaches for optimization

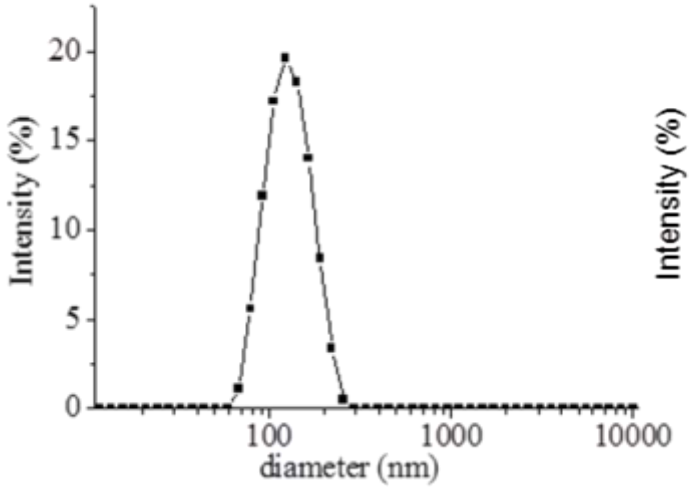
- Design of nanoparticles

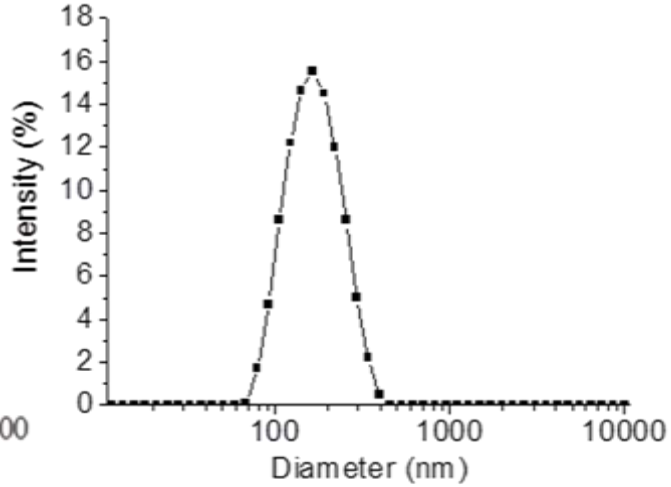
- Incorporation of curcumin into lipid bilayer and aqueous cavity in form of inclusion complex with BEC X

Results

- Monomodal distribution
- Size app.180 nm
- Zeta potential -20mV







In vitro drug release profile

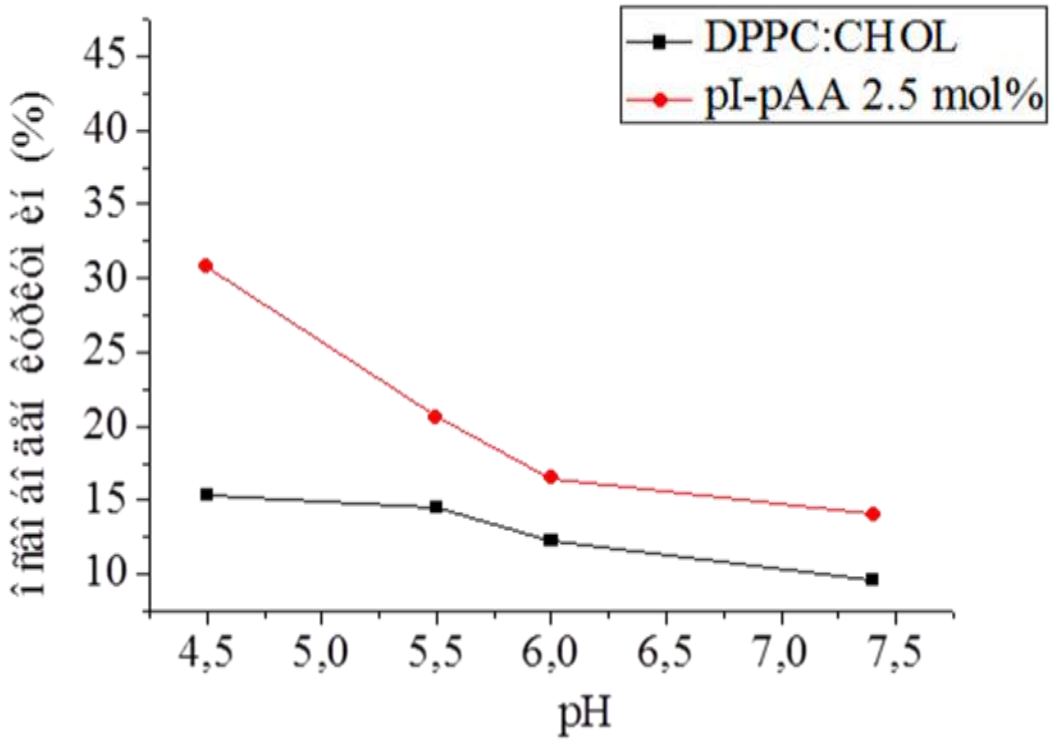


Figure 2. In vitro curcumin release from hybrid non pH sensitive (black) and hybrid pH-sensitive liposomes

Cytotoxicity

- MTT- dye reduction assay
- Panel of human cancer cell lines

Formulations	IC_{50} (µmol/L) (n=8)	
	KG-1[a]	RPMI-8226[b]
Curcumin (DMSO solution)	13,45 ± 2,31	2,89 ± 0,77
Hybrid pH sensitive liposomes: curcumin	2,19 ± 0,71	0,59 ± 0,21
BEC-X supramolecular aggregates	8,70 ± 1,44	2,22 ± 0,79

Conclusion

These findings give us a reason to conclude that the hybrid pH-sensitive liposomal nanoparticles are promising platforms for curcumin.