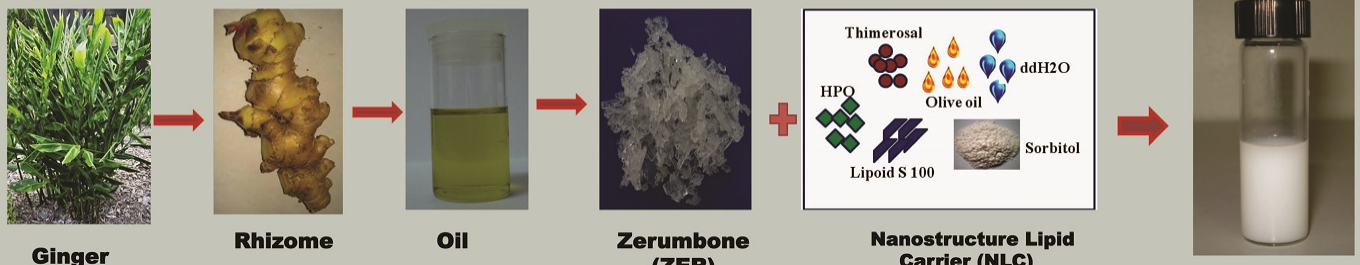
NanoZerumbone (NanoZER)

The Future of Safe Leukaemia Treatment



Ginger | Rhizome | Oil | Zerumbone (ZER) | Nanostructure Lipid Carrier (NLC) | NanoZER

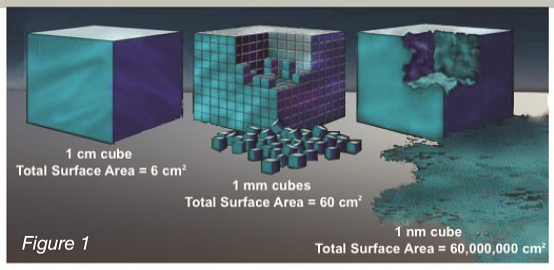
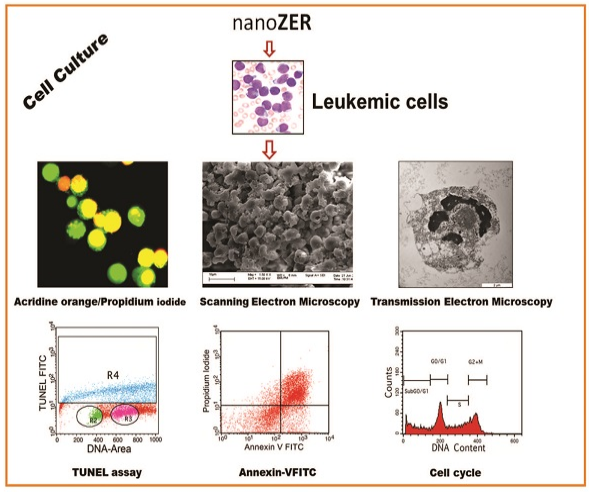


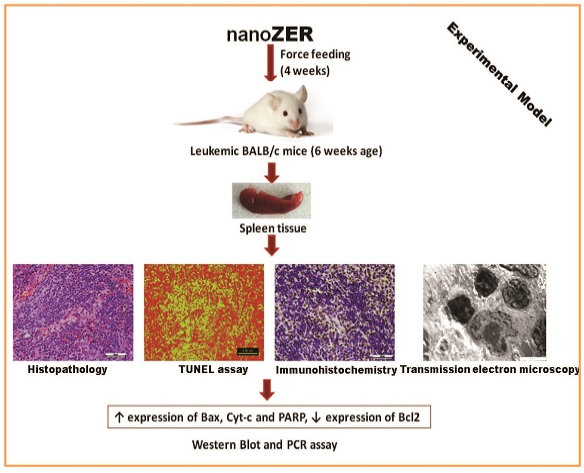
Figure 1

Characteristics of NanoZER

- Average size : **52.68 ± 0.1 nm**, Polydispersity index : **0.29 ± 0.004 µm**
- Zeta potential : **25.03 ± 1.24 mV**
- Entrapment efficiency : **99.03%**
- Sustained release of **ZER**

NanoZER	Commercial Drug (Doxorubicin)
Lower cost of preparation	Higher cost of preparation
Easy to scale-up (High pressure homogenization technique) (>100L/hour)	Difficult to scale-up
Lower cost of patient treatment	High cost of patient treatment
Minimal toxicity towards normal cells. IC50 = 5.39 µg/mL	Toxic to normal cells IC50 = 1.51 µg/mL
Safe, non-toxic degradation product and minimal side-effects	Toxic degradation product and side-effects (Alopecia, life-threatening heart damage)
Tumour selectivity	Not selective for tumours
Many dosage forms	Limited dosage form (only intravenous)
Targeted therapy	Not targeted therapy
High bioavailability, biodegradation and biodistribution	Low bioavailability, biodegradation and biodistribution
Minimal light sensitivity	Light-sensitive
Protection for active compound	No protection for active compound
Higher solubility	Low solubility
Controlled release of the active compound	Uncontrolled drug distribution





PUBLICATIONS

1. *Heshu SR, Rasedee A, Chee WH, Ahmad BA, Zeenathul NA, Hemn HO, Mohamed IS, and Swee KY (2013). Zerumbone-Loaded Nanostructured Lipid Carrier: Preparation, Characterization and Leukemic Study. Int J Nanomed (8):2769-2781.*
2. *Rasedee A, Heshu SR, Chee WH, Ahmad BA, and Swee KY (2013). A Composition for Treating Leukemia. Malaysian Patent Application (PI2013700213).*
3. *Heshu SR, Rasedee A, Chee WH, Ahmad BA, Zeenathul NA, Hemn HO, Mohamed IS, and Swee KY (2013). Zerumbone-loaded Nanostructured Lipid Carrier Induces G2/M Cell Cycle Arrest and Apoptosis via Mitochondrial Pathway in Jurkat T-cell Line. Int J Nanomed (9): 527-538.*
4. *Heshu RS, Abdullah R, Chartrand MS, Swee KY, Ahmad AB, Tan SW, Hemn HO, Zahra A, Farideh N, Arulselvan P, Fakurazi S. (2014). Antileukemic Effect of Zerumbone-Loaded Nanostructured Lipid Carrier on Murine Leukemic (WEHI-3B) Model. Int J Nanomed, (Submitted).*

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