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PREPARATION AND ENCAPSULATION OF DIORGANOTIN(IV) AS POTENTIAL ANTI CANCER DRUGS

***Lee, S. M**[1], Mohd Rosely, S. N[2], Duali Hussen, R. S[2]

[1]Research Centre for Crystalline Materials, School of Science & Technology, Sunway University, Malaysia

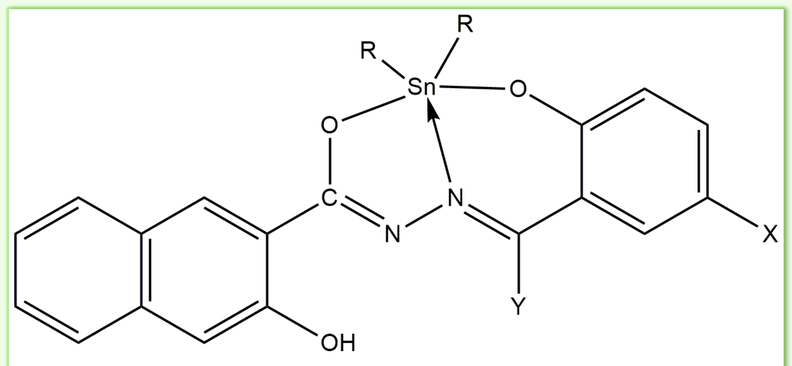
[2] *Universiti Malaya, Kuala Lumpur, Malaysia*

Email contact: annielee@sunway.edu.my

INTRODUCTION

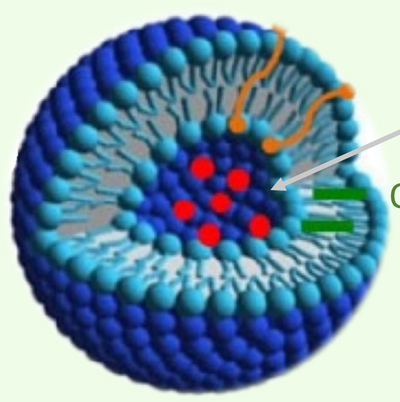
Cancer is one of the leading cause of death worldwide. Metal-based drugs such as cisplatin and other platinum compounds have had a huge impact in the treatment of cancer and are applied in many anticancer chemotherapeutic treatments. The success of these compounds has led to the discovery of other new metal-based anticancer drugs. However, as there might be a lack of selectivity when the trial compounds enter the cell, the drugs might potentially kill all dividing cells. In order to minimize the severe side effects, localised applications of drugs are important. Therefore, the application of a drug delivery system is crucial. The present work highlights the preparation of several diorganotin Schiff base complexes and its anticancer activity. Also, we prepared and characterized niosomes containing diorganotin complexes as anticancer drugs by a microencapsulation vesicle method (MCV) [1]. The encapsulation efficiency (%EE), percentage of drug loading (%DL) as well as the particle size, zeta potential and drug release of the niosomes [2] will be studied.

RESULTS AND DISCUSSION



1: R = C_4H_9, X = Br, Y = H; **2**: R = CH_3, X = Cl, Y = H
3: R = C_4H_9, X = Cl, Y = H; **4**: R = C_4H_9, X = Cl, Y = CH_3

MCV method



Niosomes (sugar surfactant)

Table 1: % EE, % DL of compounds and reference drugs

Compound	1	2	3	4	Paclitaxel	5-Fluorouracil
IC_{50} (μg ml^{-1}) [for HT29]	5.0	6.0	2.3	3.0	-	-
%EE	>99	97	>99	>99	80	55
%DL	89	86	89	88	31	4

Note:
The %EE and %DL were calculated according to [3].

Table 2: Size and zeta potential of **3**

Method	MCV
Polydispersity index (PDI)	0.4
Size distribution (nm)	724 ± 289 (75%) 207 ± 52 (23%) 5370 ±329 (2%)
Zeta Potential, mV	-33 ± 5

Figure 1: Photomicrograph of **3** niosomes

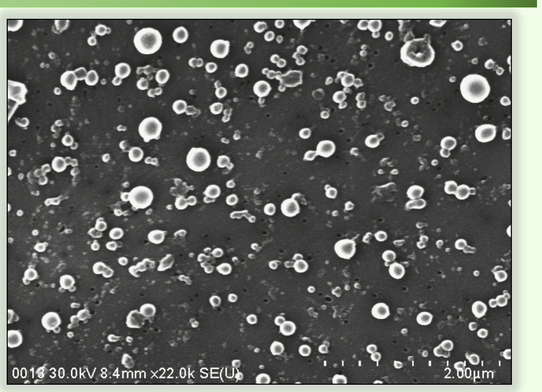
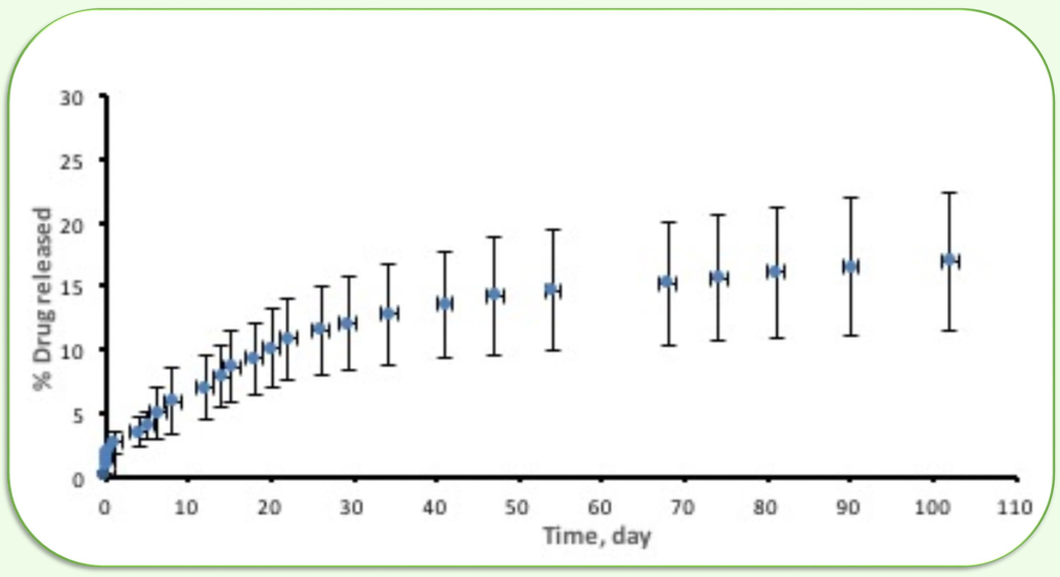


Figure 2: In vitro release of **3** formulation in 100 days



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