CPD Evidence 5 (Winter 2021)

1. Registrant Information

1.1 Full Name: Chen Liu, AMRSB
1.2 Profession: BMS
1.3 Registration Number: BS075665
1.4 CPD type: Work-based learning—Case study
1.5 Date of completion: 23/12/2021
1.6 Standard(s) met:
Standard 2 – A registrant must identify their CPD activities are a mixture of learning activities relevant to current or future practice

2. Details

Title: Investigation of the *in vitro* anti-cancer effect of dexamethasone

Dexamethasone is a corticosteroid which is being used to treat a wide range of conditions including rheumatic arthritis, meningitis, myeloma, leukaemia and lymphoma (Johnson *et al.*, 2021).

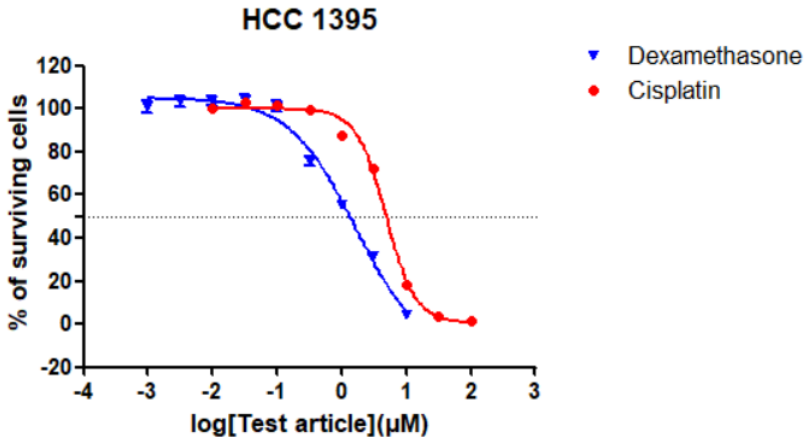
In this study, I treated cells derived from breast ductal carcinoma, HCC1395 with a chemotherapy agent dexamethasone *in vitro.* Test article was serially diluted into 9 (1:3.16) concentrations. The stock concentration of the test article was 100mM, the final top concentration is 100μM (1000×). Cisplatin was used as a positive control.

Serial Dilution:

$$100\text{mM} \xrightarrow[15\mu\text{L}]{1:100} 1\text{mM} \xrightarrow[5\mu\text{L}+10.8\mu\text{L}]{1:3.16} 100\mu\text{M}$$

After drug treatment, the cells were incubated for 72hr prior the cell viability assay. Cell viability was investigated with the CellTiter-Glo (CTG) assay. The CTG assay utilizes the amount of ATP, which is one of the reactants for converting beetle luciferase into oxyluciferin, with the presence of Mg^{2+} and luciferase.

IC50 of both components were calculated based on the non-linear survival vs. inhibition regression model. Results are shown below:



	Nonlin fit Table of results	A Dexamethasone	B Cisplatin
		Y	Y
1	log(inhibitor) vs. response -- Variable slope		
2	Best-fit values		
3	Bottom	-15.03	0.5192
4	Top	105.0	99.92
5	LogIC50	0.2073	0.6843
6	HillSlope	-0.8507	-1.909
7	IC50	1.612	4.834
8	Span	120.0	99.40
9	Std. Error		
10	Bottom	11.26	1.681
11	Top	1.822	0.9803

Reference:

Johnson DB, Lopez MJ, Kelley B. Dexamethasone. In: StatPearls. StatPearls Publishing, Treasure Island (FL); 2021.