**Background**

Diffuse large B cell lymphomas (DLBCL) are aggressive tumours with frequent aberrations in epigenetic proteins. Histone deacetylase inhibitors (HDACi) are epigenetic agents with pre-clinical and clinical efficacy in lymphomas. Here we investigated the *in vitro* anti-lymphoma activities of eight novel HDAC6 inhibitors (HDAC6i) in DLBCL.

**Methods**

MTT assay was used to assess the anti-proliferative activities of HDAC6i: SS-2-08, SS-5-55, SW-101, SW-113, SW-114, SW-115, SW-117 and WT-36-87, alone or combined with venetoclax or copanlisib (72 hours [hrs] in DLBCL cells: DOHH2, OCI-LY-18 (BCL2 and MYC translocated); SU-DHL-4, OCI-LY-1 (BCL2 translocated and MYC amplified).

The Chou-Talalay combination index (CI) determined additive effect (CI 0.9-1.1), synergism (CI < 0.9) and antagonism (CI > 1.1). For cell cycle analysis by flow cytometry, cells were fixed in 70% ethanol then stained with 7-AAD. Western blotting determined levels of acetylated α-tubulin.

**Results**

![Figure 1](image1.png)

![Figure 2](image2.png)

![Figure 3](image3.png)

**Table 1.** Dose response curves for a DLBCL cell line treated with concentrations of each of the eight HDAC6i for 72 hrs.

**Table 2.** IC50 values (μM) obtained for DLBCL cells treated with each of the eight HDAC6i. >0 indicates that the IC50 is higher than the maximum concentration used for the MTT assay (20 μM).

**Table 3.** Combination index (CI) obtained when the four most potent HDAC6i were combined respectively, with venetoclax or copanlisib. Synergism: CI < 0.9; additive: CI 0.9-1.1; antagonism: CI > 1.1; 95% CI, 95% confidence interval, N/A, not applicable.

**Conclusions**

We observed robust *in vitro* anti-lymphoma activity of novel HDAC6i in DLBCL cells. Our results suggest that these agents are worthy of further pre-clinical investigation in DLBCL as single agents and in combination with other targeted anti-lymphoma drugs.

**Contact information**

A. A. Mensah: afua.mensah@ior.usi.ch  
F. Bertoni: francesco.bertoni@ior.usi.ch