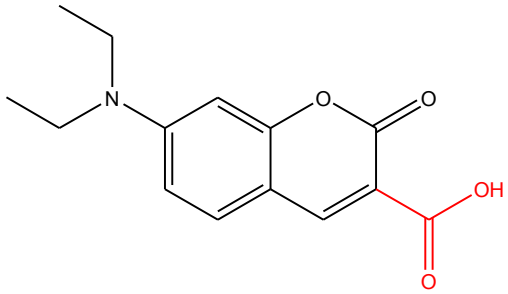
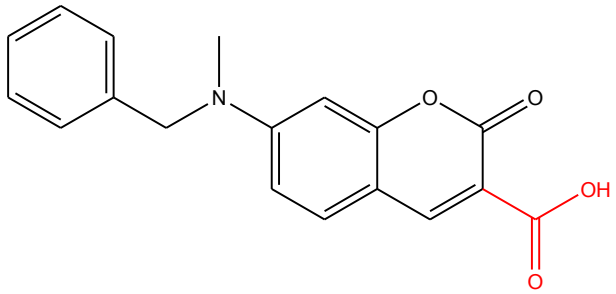
**Supplementary Figure 1.**

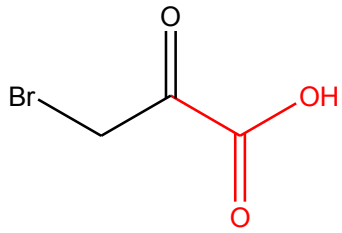
Chemical structures of 7ACC compounds; 3-bromopyruvate and the AR-C155858 compound.



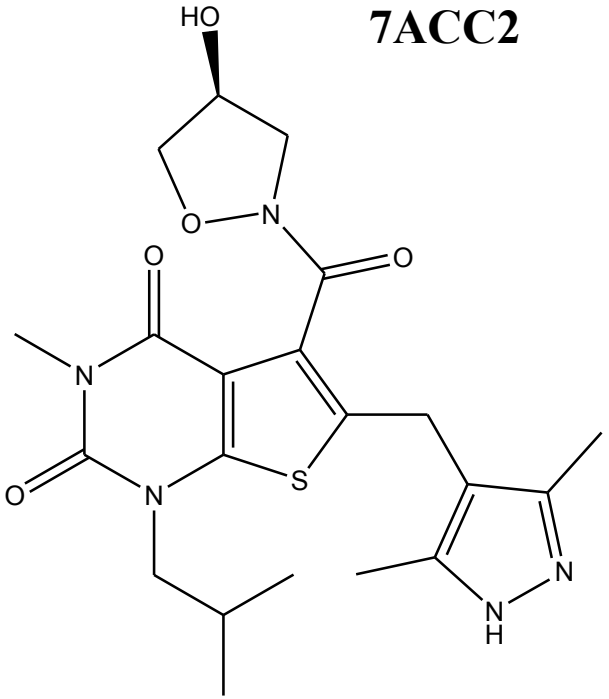

**7ACC1**




**7ACC2**



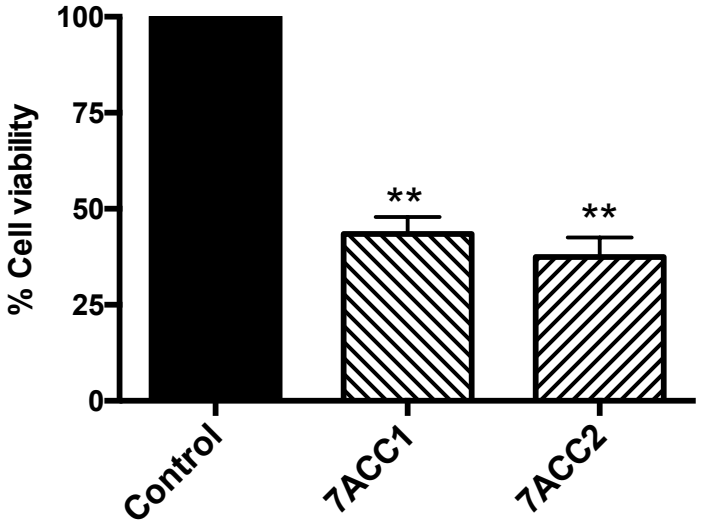

**3-Bromopyruvate**




**AR-C155858**

**Supplementary Figure 2.**

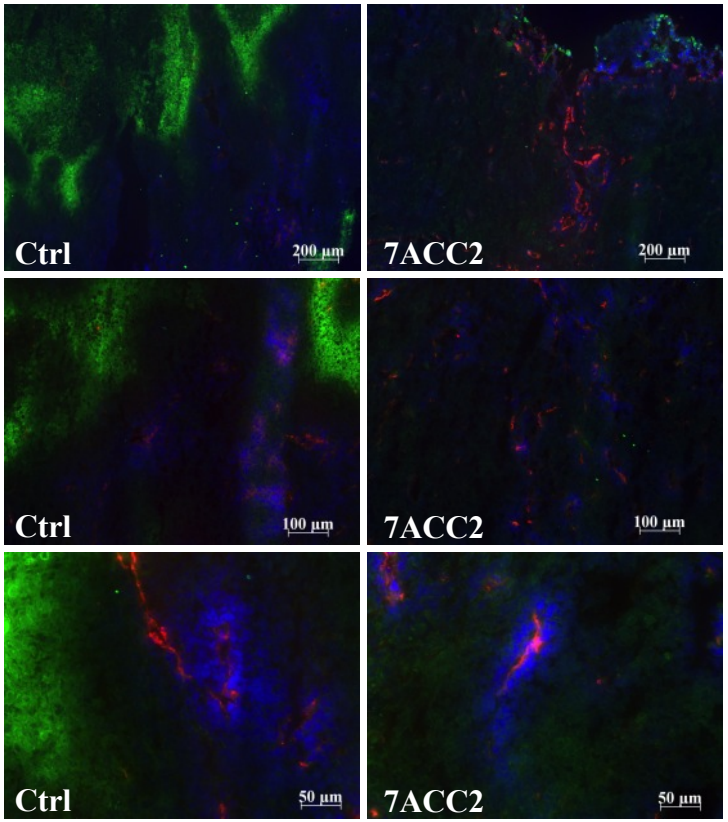
Effect of 7ACC compounds (10 μM , 72h) on the viability of FaDu cancer cells, expressed as % of viability of untreated cells. **P<0.01, n=3.



**Supplementary Figure 3.**

Tumor hypoxia and perfusion are probed with pimonidazole (green) and Hoechst (blue) staining of tumor cryo-sections from SiHa xenografts, respectively; tumor vasculature is also immunolabelled with anti-CD31 antibodies (red).

Mice were daily treated with vehicle or 7ACC2 and injected intravenously with pimonidazole (60 mg/kg) and Hoechst33342 (15 mg/kg) 2h and 2 min respectively before sacrifice and tumor excision.




Pimonidazole/CD31/Hoechst 33342

**Supplementary Figure 4.**

**A.** Effects of 100 μM 3-bromopyruvate (3BP) and 7ACC compounds on [$^{14}$C]-lactate uptake determined in SiHa cells. Data are expressed as % of the uptake measured in the presence of vehicle (control); **P<0.01, n=3.

**B.** Effects of 7ACC compounds (1 μM) on lactate uptake by SiHa cells in the presence of increasing concentrations of extracellular lactate. Data are expressed as % of the uptake measured in the presence of vehicle (control); ***P<0.001; **P<0.01, n=3.