Ackermann et al. reported on the effects of a newly synthesized hybrid of sulfasalazine (SAS) and dihydroartemisinin (DHA), called AC254. In previous studies, both SAS and DHA have already proved to have anti-tumor properties themselves and to have sensitizing respectively potentiating effects on other treatments against malignant tumors. We investigated the impact of individual drugs SAS and DHA, their 1:1 combination and a novel SAS-DHA hybrid compound (AC254) on rodent and human glioma cells. In our study SAS alone showed no or only a mild effect on glioma, whereas DHA led to a significant reduction of cell viability in a dose-dependent manner. Next we compared the efficacy of the hybrid AC254 to the combinational treatment of its parent compounds SAS and DHA. The hybrid was highly efficient in combating glioma cells compared to single treatment strategies regarding cell viability and cell death. Interestingly, AC254 showed a remarkable advantage over the combinational treatment with both parent compounds in most used concentrations. In addition to its reduction of tumor cell viability and induction of cell death, the hybrid AC254 displayed changes in cell cycle and reduction of cell migration. Taken together, these results demonstrate that clinically established compounds such as SAS and DHA can be potentiated in their anti-cancer effects by chemical hybridization. Thus, this concept provides the opportunity to devise new effective chemotherapeutic agents [1)].

1)

Ackermann A, Çapcı A, Buchfelder M, Tsogoeva SB, Savaskan N. Chemical hybridization of sulfasalazine and dihydroartemisinin promotes brain tumor cell death. Sci Rep. 2021 Oct 21;11(1):20766. doi: 10.1038/s41598-021-99960-z. PMID: 34675351; PMCID: PMC8531376.