Synthesis of New β-Lactam Analogs and Evaluation of Their Histone Deacetylase (HDAC) Activity

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A simple synthesis of the β-lactams **11** – **13** and **16** – **17** as novel histone deacetylase (HDAC) inhibitors is described. The key synthetic strategies involved the *O*-alkylation of 6-APA and the coupling reactions of freshly prepared *N*-carbobenzyloxy-L-prolines **5** and **6** and 6-aminopenicillanates **8** – **10** and **15** in high yields. It was found that all compounds show potent growth inhibitory activity on human tumor cell lines, the most potent compound **16** exhibiting an IC_{50} = 2.1 μM *in vitro*.

Key words: β-Lactams, Histone Deacetylase, Coupling Reaction, Anticancer, Synthesis