SYNTHESIS AND IN SILICO PERMEABILITY ANALYSIS USING THE BOILED-EGG MODEL FOR (E)-1-(2-((2-(1-(2-AMINO-4-METHYLTHIAZOL-5-YL) ETHYLIDENE)HYDRAZINYL)METHYL)-4-METHYLTHIAZOL-5-YL)ETHANONE

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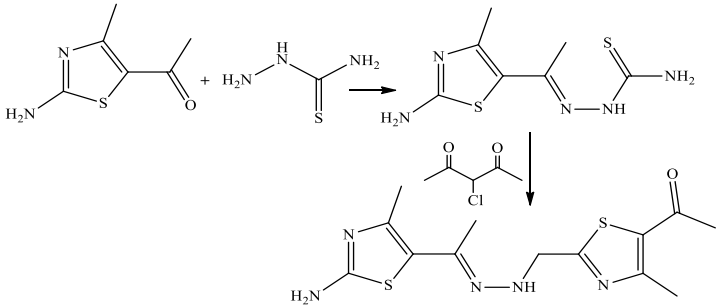
The synthesis of new thiazole-containing compounds is of significant interest in medicinal chemistry due to their wide range of potential biological activities. Incorporation of a hydrazone fragment into the structure contributes to the expansion of the molecule's pharmacological profile by enabling the formation of specific interactions with biological targets.

The compound (E)-1-(2-((2-(1-(2-amino-4-methylthiazol-5-yl)ethylidene)hydrazinyl)-met-hyl)-4-methylthiazol-5-yl)ethanone was synthesized to obtain a promising biologically active scaf-fold. In parallel with the experimental synthesis, an in silico permeability analysis was performed using the BOILED-Egg model to assess the likelihood of gastrointestinal absorption and penet-ration of the blood-brain barrier. Such an integrated approach allows a preliminary evaluation of the compound's drug potential.



As part of the pharmacokinetic evaluation of the investigated compound, the graphical predictive BOILED-Egg model implemented in the SwissADME platform was applied. This model enables the prediction of passive gastrointestinal absorption (HIA) and blood–brain barrier (BBB) penetration based on the relationship between lipophilicity (WLOGP) and topological polar surface area (TPSA).

According to the obtained diagram, the point corresponding to the analyzed compound is located outside both the white region (high probability of HIA) and the yellow region (high probability of BBB penetration). This indicates a low predicted capacity for passive gastrointes-tinal absorption and an absence of penetration into the central nervous system. Such a result may be attributed to the elevated TPSA value and the presence of multiple hydrogen bond donor and acceptor centers, which increase molecular polarity and limit membrane permeability.

Additionally, the compound is predicted not to be a substrate of P-glycoprotein (PGP–), suggesting the absence of active efflux via this transport mechanism. This may be advantageous in terms of maintaining stable systemic concentrations.

Overall, the BOILED-Egg analysis indicates a limited ability of the compound to cross bio-logical barriers, which should be considered during further structural optimization and formulation development.