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***Trans*-aconitic acid-based *hetero*-Diels-Alder reaction in the synthesis of thiopyrano[2,3-*d*][1,3]thiazole derivatives**

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Abstract: The *hetero*-Diels-Alder reaction of 5-arylideneisorhodanines with *trans*-aconitic acid proceeds as a regio- and diastereoselective process with spontaneous decarboxylation of the [4+2]-adduct to furnish thiopyrano[2,3-*d*][1,3]thiazole (**2**) and chromeno[4',3':4,5]thiopyrano[2,3-*d*]thiazole (**3**) derivatives analogously to the use of itaconic acid as a dienophile. Conversely, the one-pot, three-component reaction of 5-arylideneisorhodanines, *trans*-aconitic acid and anilines proceeded without decarboxylation, leading to novel *rel*-(5'*R*,6'*R*,7'*R*)-5'-carboxy-7'-aryl-1-aryl-3',7'-dihydro-2*H*,2'*H*,5*H*-spiro[pyrrolidin-3,6'-thiopyrano[2,3-*d*]thiazol]-2,2',5-triones **4**. Interestingly, the use of *trans*-aconitic acid trimethyl ester led to the opposite regioselectivity, yielding *rel*-(5*R*,6*S*,7*S*)-5-methyloxycarbonylmethyl-2-oxo-7-aryl-3,5,6,7-tetrahydro-2*H*-thiopyrano[2,3-*d*]thiazol-5,6-dicarboxylates **5**. Selected compounds were examined for trypanocide activity against the bloodstream forms of *Trypanosoma brucei* where compound **4e** showed the highest activity (IC₅₀ = 6.74 μM).

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