TRICYCLIC FLAVONOIDS WITH 1,3-DITHIOLIUM SUBSTRUCTURE: SYNTHESIS AND ANTIBACTERIAL ACTIVITY

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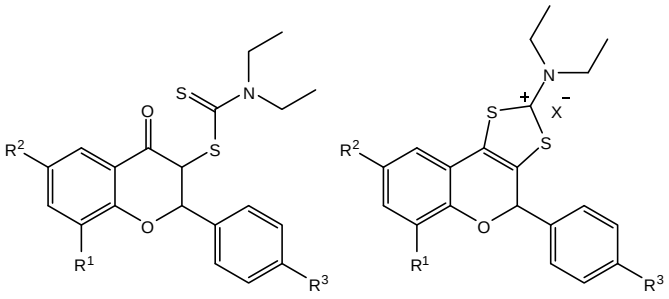
The synthesis of new 3-dithiocarbamic flavonoids has been accomplished by the reaction of the corresponding 2-hydroxyaryl dithiocarbamates with aminals. These flavonoids were obtained as a mixture of diastereoisomers, the *anti* isomer being the major one. The heterocyclization of these compounds provided a little known class of tricyclic flavonoids bearing a 1,3-dithiolium-2-yl ring fused at the 3,4-carbon positions of the benzopyran moiety. Sulfur containing flavanones and tricyclic flavonoids were tested for antibacterial activity against *Staphylococcus aureus* ATCC 25923 (Gram-positive) and *Escherichia coli* ATCC 25922 (Gram-negative), using disc diffusion assay with gentamicin as reference and minimum inhibitory concentrations were determined where activity was found present [1-4].

While the tested flavanones did not yield the desired results, good antibacterial activities were recorded for the tricyclic flavonoids. The introduction of the 1,3-dithiolium cation produced results comparable to those of gentamicin and in some cases, MIC values were less than 1μg/ml. The ion-dissociation *vs.* formation of a tight ionpair appears to be of significant importance on how cationic tricyclic flavonoids interact with bacteria. The major component of bacterial cell wall is represented by negatively charged phosphatidylethanolamine (70%). Thus, the positively charged 1,3-dithiolium flavonoids target the oppositely charged biological structures such as cell walls of microorganisms which leads to the leakage of intracellular substances [5].



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