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**Combined in silico approach in screening of flavonoids database  
for potential NLRP3 inhibitors**

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NLRP3 (NOD-, LRR- and pyrin domain-containing protein 3) is a cytosolic sensor protein with a key role in host immune responses to microbial infection and cellular damage. It is capable to detect a broad range of highly diverse stimuli resulting in its activation and assembly (together with ASC and pro-caspase-1 proteins) into NLRP3 inflammasome. This supramolecular complex triggers release of the pro-inflammatory cytokines IL-1 $\beta$  and IL-18, as well as to gasdermin D-mediated pyroptotic cell death. Abberant NLRP3 inflammasome activation is linked with the development of many acute and chronic diseases and direct targeting of NLRP3 protein can be the best option for its inhibition.

The anti-inflammatory effect of flavonoids is well known, and recent studies have shown a number of flavonoids that inhibit NLRP3 inflammasome activation. Here the TimTec database containing 501 flavonoid compounds was screened to find the most promising candidate compounds targeting NLRP3 protein directly. Our screening protocol included subsequent filters considering both long-range and short-range interactions. First electronic molecular descriptors: the average quasi-valence number (AQVN), and the electron-ion interaction potential (EIIP) were applied. After that further filtering was done by 3D QSAR and molecular docking. The resulting compounds may have promise to further investigations and experimental testing.