

Chemical modification of dihydroquercetin (taxifolin) and biological activity of its derivatives

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Abstract

This review covers the latest data, mainly of the authors, on the structure and chemical properties of dihydroquercetin (taxifolin) as one of the representatives of the plant flavonoids (FL). The latter are the excellent means for not only the prevention and health care activities, but also for the treatment of many diseases caused by imbalance in the enzymes. In addition, FL have antibacterial, antioxidant, membran-and-immuno-stabilizing, anti-inflammatory, decongestant, anti-cancer and other properties which turn them into quite valuable synthons for chemical modification, research of biological activity and development of new preparations. Based on the structural features and biological activity, the class of plant flavonoids in their reactivity, especially in relation to oxygen, dissociates into two groups: having the three conjugated rings and the group with the absence of conjugation between cycles A and B. These differences are manifested in the UV-spectra with respect to oxygen, complexation with metals in the biological activity - inhibitory concentrations may differ by two to three orders of magnitude. Literature data shows that in contrast to the previously described processes of complexation, dihydroquercetin (DHQ) forms complexes with oxygen, which once were taken as complexes with metals. In those cases where the DHQ concentration used were less than 0.01%, the authors had artifacts – DHQ complexes of reversible interaction with oxygen, which determined the properties studied. It is suggested that these complexes change the conductivity of the capillaries under the action of DHQ.