Abstract:

This work is devoted to a study of the interaction between iron(II) ions and flavonoids (epicatechin, catechin, quercetin) by means of mass spectrometry and electrospray ionization. First, a measurement with model molecules (pyrocatechol, resorcinol, 3-hydroxy-2-methyl-4-pyrone) has been performed in order to find how iron(II) intereacts with the OH groups on the hydrocarbon rings. It has been found that Fe^{2+} coordinates to epicatechin and probably also catechin (the measurement with catechin was unsuccesfull because of contamination by sodium) between the OH groups at the ring B and the fragmentation of the complex can proceed via a retro-Diels-Alder´s reaction and thus lead to cleavage of the pyrone ring. Quercetin has at the pyrone ring the keto function next to the OH group, therefore the iron ion binds to these functions rather than to the OH groups at the ring B. Accordingly, the retro-Diels-Alder´s reaction is not possible and the complex loses only small molecules of water and carbon oxide from the side rings as it was found for the complexes of model molecules.