

## **The Effects of Antioxidant Quercetin on Membrane Electrical Properties in the Presence of some Heavy Metals**

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Quercetin, a flavonoid synthesized by plants and found in various foods, has remarkable properties concerning its interactions with biological mechanisms of protection against pathological circumstances, due to its strong antioxidant properties. The compound has different affinities to biological and artificial membranes, in which it inserts or to which it attaches. Quercetin has a heavy-metal binding activity, which can be explained by the appearance of the flavonoid-metal complex, due to the affinity of the catechol group – the binding unit of the benzen ring, as well as of the ketonic groups near the OH radicals. This might be the mechanism by which quercetin protects the living cell against the free radicals induced by heavy metals intoxication. Our results show that the insertion of quercetin in artificial bilayers, due to its planar structure, leads to the augmentation of lipid bilayer electrical parameters, such as conductance and capacitance, monitored by the electrophysiological BLM (Black Lipid Membrane) method. We are measuring the variations of these electrical properties of the artificial lipid membranes in the presence or absence of heavy metal ions and in the presence or absence of quercetin. We are interested in obtaining important clues on the mechanisms by which flavonoids and heavy metals interact with the membranes, clues that are essential for understanding the way the same processes develop *in vivo*.