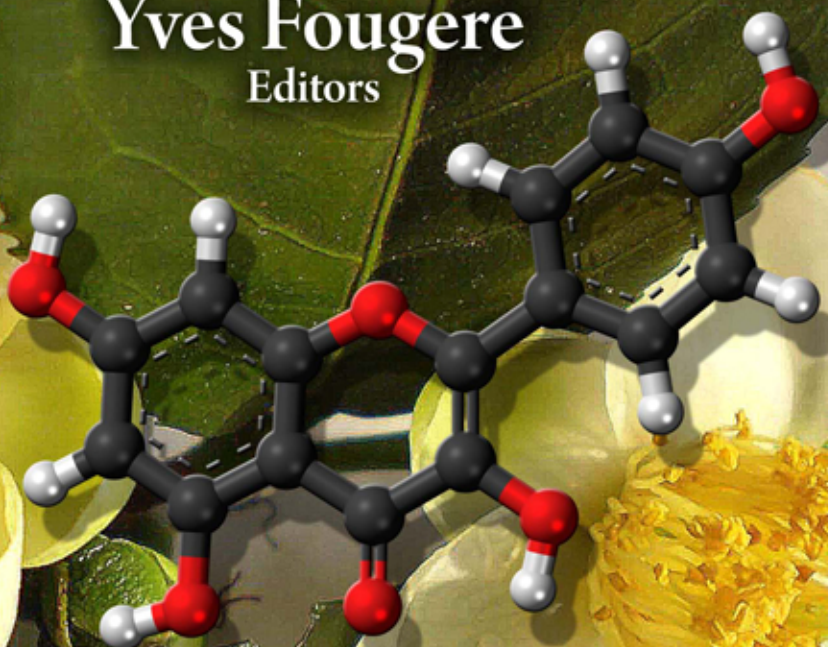
BIOCHEMISTRY RESEARCH TRENDS

Garion Villers
Yves Fougere
Editors



Kaempferol

Chemistry, Natural Occurrences and Health Benefits

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CHEMISTRY, NATURAL OCCURRENCES AND HEALTH BENEFITS

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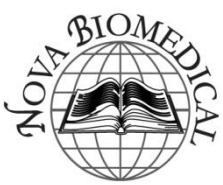

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Contents

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Chapter 7

Metal Complexes of Kaempferol and their Speciation in Human Plasma

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Flavonoids are a large class of phenolic compounds which are sub classified as flavones, flavonols, isoflavones, flavanones and catechins, chalcones and anthocyanidins depending on phenyl substituent in the C_2 or C_3 position in *benzo-γ-pyrone* nucleus. Interest in the bioflavonoids is related to their diversity, biological significance as secondary plant metabolites and ecological role [1], use as chemotaxonomic markers [2], impact on fruit quality [3], physiological effects [4–6] and industrial applications [7].

The flavonoids are potent antioxidants, free radical scavengers [8] and metal chelators; they inhibit lipid peroxidation [9] and exhibit various physiological activities [10–15], including anti-inflammatory [16], anti-allergic, anti-carcinogenic, antihypertensive and anti-arthritic activities [17].

It is well known that blood serum contains essential amino acids, 12 essential metal ions at least another 100 ligands as well as numerous low molecular weight complexes. In addition, there are α/β macro globulins such as albumin and transferin weighing up to 100000 Daltons. It has been well demonstrated that metal ions play a large number of important roles in biological systems [18–20]. Metal ions which are considered essential to human life included calcium, magnesium, manganese, iron, cobalt, copper and zinc [21]. Furthermore man is constantly being challenged by pollutants included the toxic metal ions mercury, cadmium and lead.

In each flavonoid molecule, there are three domains that can likely interact with metal ions, *i.e.*, the 3',4'-dihydroxy group located on the B ring, the 3-hydroxy or 5-hydroxy and the

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