EVALUATION OF ANTIGERMINATIVE ACTIVITY AND POSSIBILE STRUCTURE-ACTIVITY RELATIONSHIP OF DIFFERENT FLAVONOIDS

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Flavonoids constitute a family of aromatic molecules, derived from phenyl and malonyl-coenzyme A and classified into several groups, e.g. flavones, flavonols, chalcones, flavanones, isoflavones, anthocyanidins and others, according to the chemical features of rings A and B, and the oxidation state of the C-ring. While flavanones and flavanols have a single bond between the atoms 2 and 3 of C-ring, flavones, flavonols, isoflavones and anthocyanidins have a double or aromatic bond in the same position. The ring B is normally attached to position 2 of the ring C except in the case of isoflavonoids. Flavonoids display structural variations in the bicyclic ring structure of their skeleton, in the number and position of the substituents and in the sugar moieties; about 97% of flavonoids exist as aglycons (Kinoshita *et al.*, 2006). Several biological functions are attributed to this class of compounds. They protect plants from predators and infectious agents, shield plants from UV-B radiation, act as signaling molecules in plant-bacterium symbioses and are the primary pigments that attract pollinators and seed dispersers (Mol *et al.*, 1998). Despite the wide distribution of this large group of compounds among the flowering plants, it seems that particular classes of flavonoids have distinct functions in different plant groups (Bais *et al.*, 2003). Moreover, these compounds appear to act primarily as germination and cell growth inhibitors, possibly through interference with the energy transfer system within the cell (Moreland *et al.*, 1988). The available literature suggests specific structural requirements for particular flavonoids to act as stimulators of destruction of indoleacetic acid via IAA oxidase, which results in the inhibition of ATP formation (Stenlid, 1976). However, the role that individual compounds play in biochemical interactions among plants is not well known (Beninger *et al.*, 2004) and their functions remain a comparatively little-studied area of chemical ecology.

The objective of this work was to study the *in vitro* toxicity of twentyseven flavonoidic compounds against the germination and early growth of the radicles of *Raphanus sativus* L. (radish) and *Lepidium sativum* L. (cress), in monitored conditions, with the aim to evaluate a possible structure/activity relationship.

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