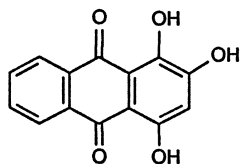


109.1 Introduction

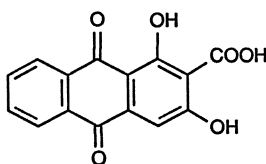
Qiancao, Radix Rubiae, is the dry root and rhizome of *Rubia cordifolia* L. (Rubiaceae) collected in spring and fall. It is an officially listed herbal medicine in the Chinese Pharmacopoeia and is recommended as a hemostatic agent for the treatment of hematorrhea, hematemesis, nose bleeding, traumatic bleeding, dysmenorrhea, and arthritis.

109.2 Chemical Constituents

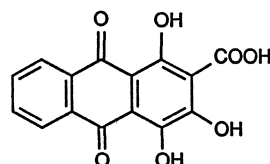
The root of *R. cordifolia* contains a number of anthraquinone pigments. The first pigment named purpurin (109-1) was reported more than 100 years ago [1–3]. Later the related pigments munjistin (109-2) [3, 4], pseudopurpurin (109-3) [5], and alizarin [6] were isolated. Pseudopurpurin is purpurin-3-carboxylic acid. On sublimation it undergoes decarboxylation to yield purpurin [5].



Purpurin (109-1)



Munjistin (109-2)



Pseudopurpurin (109-3)

A number of further known and new anthraquinone pigments were isolated from the root of *R. cordifolia* and identified. They include: 1-hydroxy-2-methylanthraquinone, nordamnacanthal (109-4), physcion, 1,4-dihydroxy-6-methylanthraquinone [7], 1,4-dihydroxy-2-methylanthraquinone, 1,5-dihydroxy-2-methylanthraquinone [8], 1-hydroxy-2-methoxyanthraquinone, 1,3-dimethoxy-2-carboxyanthraquinone, rubiadin (109-5) [9], 1,3-dihydroxy-2-ethoxymethylanthraquinone, lucidin primeveroside (109-6), ruberythric acid (109-7), 1,3,6-trihydroxy-2-methylanthraquinone, 1,3,6-trihydroxy-2-methylanthraquinone 3-*O*- α -L-rhamnopyranosyl-(1 \rightarrow 2)- β -D-(6-*O*-acetyl)-glucopyranoside (109-8) and its deacetyl derivative [10] 1-acetoxy-3,6-dihydroxy-2-methylanthraquinone 3-*O*- α -L-rhamnopyranosyl-(1 \rightarrow 4)- α -D-glucopyranoside (109-9) [11], 1,4-dihydroxy-2-carboethoxyanthraquinone, and 1-hydroxy-2-carboxy-3-methoxyanthraquinone [12].