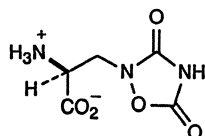


104.1 Introduction

Shijunzi, Fructus Quisqualis, is the dry fruits of *Quisqualis indica* L. (Combretaceae) collected in the fall. This herbal medicine is officially listed in the Chinese Pharmacopoeia and is used mainly as an anthelmintic.

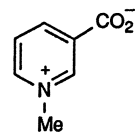
104.2 Chemical Constituents

The anthelmintic principle in fruits of *Q. indica* was isolated and determined as an amino acid quisqualic acid (104-1). The structure of quisqualic acid was elucidated by spectral analysis, chemical synthesis [1, 2], and crystallographic investigation [3]. It is an L-alanin derivative substituted with a dioxooxadiazolidin ring. Isolation from the fruits yields potassium quisqualate [4].



Quisqualic acid (104-1)

In addition to quisqualic acid, linoleic, oleic, palmitic, stearic, and arachidic acids, sucrose, fructose [5], and D-mannitol [4] were detected in the fruits of *Q. indica*. From the leaves of *Q. indica* potassium quisqualate, L-proline, L-asparagine, and trigonelline (104-2) were isolated and identified [6].



Trigonelline (104-2)

Because of the relative inaccessibility of quisqualic acid from natural sources or by a convenient method of synthesis, investigations on the synthesis of this enantiomeric compound have been carried out. Synthesis of (RS)-quisqualic acid at an overall yield of 20% from an enol α -benzoylamino- β -hydroxy-acrylic acid ethyl ester