

11.1 Introduction

Allium sativum L. (Liliaceae), garlic, is a well known spice and has been used worldwide as a folk medicine for treatment of various infectious diseases; prevention of coronary thrombosis, atherosclerosis, and stroke; and for treatment of hyperlipidemia and vascular disorders. It is included in the appendix of the Chinese Pharmacopoeia.

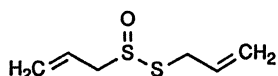
The Chinese Pharmacopoeia lists two additional items from *Allium* species.

- Jiucaizi, Semen Allii tuberosi, is the dry ripe seed of *A. tuberosum* Rottl. collected in fall when the seeds are ripe. It is used for treatment of polyuria, impotence, and lumbago.
- Xiebai, Bulbus Allii macrostemi, is the dry bulb of *A. macrostemon* Bge. collected in summer and fall. It is used as an antiasthmatic and antidiarrheic drug.

11.2 Chemical Constituents

11.2.1 Chemical Constituents of *Allium sativum*

Garlic is known to contain a number of organic sulfur compounds including the odoriferous substance allicin (11-1), which was isolated by extracting garlic with ethanol at room temperature [1]. The structure of allicin was determined as *S*-allyl 2-propene sulfinothioic acid ester [1, 2].



Allicin (11-1)

Later, the isolation of a sulfur containing amino acid derivative, *S*-allylcysteine *S*-oxide (alliin, 11-2), was reported [2]. Alliin is an odorless solid with a pungent taste that is converted by the enzyme allinase into allicin (Fig. 11-1).