

PL5. Volatile compounds of the genus *Allium* L.

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Allium species like garlic (*A. sativum* L.), as well as common onion (*A. cepa* L.), are well investigated in terms of their sulphur compounds. In general, odorless cysteine sulphoxides like alliin or isoalliin will be converted by the enzyme alliinase into allicin and the so-called ‘lachrymatory factor’, respectively. These compounds are rather unstable and will form a huge variety of further volatile, characteristic smelling sulphur compounds. Moreover, more compounds have been discovered during the last years. Especially the mountainous areas of Middle and Southwest Asia are a rich source for wild-growing *Allium* plants. For instance, *A. tripedale* Trautv. belonging to the subgenus *Nectaroscordum* is naturally growing in the northwest of Iran and neighboring countries. Leaves have a very strong and hot taste and are widely used by the local population as a spicy vegetable. As a major constituent of the bulb, (+)-*S*-(1-butenyl)-L-cysteine sulphoxide (‘homoisoalliin’) could be identified. As volatile compounds, di-(1-butenyl)-disulphide and the cepaene-like compounds di-(1-*S*-sulphoxymethyl-butyl)-disulphide, 1-*S*-sulphoxymethyl-butyl-1'-*S*-sulphoxy-1-butenyl-butyl-disulphide and 1-*S*-sulphoxymethyl-butyl-1'-*S*-sulphoxybutyl-butyl-disulphide could be identified by various MS experiments [1]. Primary products resulting from the alliinase reaction of homoisoalliin seem to be highly unstable and were rapidly converted to the volatile compounds listed above. A further rather interesting species of this area is *A. stipitatum* Regel. Pyridinyl containing sulphoxides could be identified for the first time in the genus *Allium* [2]. It can be assumed that these compounds were converted into pyridinyl-*N*-oxides inside the plant. Corresponding *N*-oxides were also monitored after alliinase reaction giving the very typical odor of this species. Beside pyridinyl derivatives, the cysteine sulphoxide marasmin could be observed also yielding volatile sulphur compounds after alliinase reaction with at least three sulphur atoms. Especially *A. suworowii* Regel is rich in this compound delivering a unique smell and taste [3].

References:

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