

### B033 Influence of the extraction solvent on the spectrum of extracted substances of *Valeriana officinalis* L. and *Humulus lupulus* L.

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The choice of the extraction solvent determines the spectrum of extracted substances. In the other side the choice of the lead substances for the quality control should be in congruence with the chosen extraction conditions. Extractions of valerian and hop were prepared with aqueous solvents containing 0% - 100% methanol respectively ethanol. For valerian the amounts of valerenic acids and of the free amino acids arginine, glutamine and  $\gamma$ -aminobutyric acid (GABA) were determined by HPLC (1,2). The presence of valepotriates was checked with TLC (3). For hop the amounts of bitter acids, xanthohumol and the free amino acids asparagine and GABA were investigated with HPLC (2,4).

For valerian the results implicate the choice of valerenic acids as lead substances for extracts, produced with a solvent containing more than 40% methanol respectively ethanol. Amino acids could be a possible alternative for aqueous extracts (solvent contains 0 - 60% methanol respectively ethanol).

For hop the bitter acids and xanthohumol as lead substances are only suitable for extracts, produced with a solvent containing more than 60% methanol respectively ethanol. For more polar extracts the amino acids are better suited as lead substances.

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### B034 Detection of amino acids via TLC as a rapid method for the screening of hop and valerian

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The quality control of pharmaceutical herbal drugs and products via free amino acids was suggested as a possible alternative within the scope of a dissertation (1). This suggestion was followed for a combination product of hop and valerian. Reasons have been difficulties regarding the quality control of hop: In the PhEur monograph of *Humulus lupulus* L. the proof of identity is done via bitter acids, but a quantitative test is not given (2). Effective substances or the effective principle are not enlightened up to now. The bitter acids, with importance borrowed from the beer production, proved not to be stable for a longer time. This is also the case for other substances like the flavonoid xanthohumol (3).

A possible alternative in the quality control of hop could be the determination of the amino acid asparagine, quantified with HPLC (1). For valerian arginine and glutamine could be used as lead substances for the quality control via amino acids (1). The presence of  $\gamma$ -aminobutyric acid (GABA) in drugs is of general interest because of its possible pharmacological effect as inhibitory neurotransmitter (4). Because there are only few data about free amino acids in drugs, a rapid and simple method was needed to have a faster test than HPLC to analyse a high number of samples.

A TLC method was developed for the simultaneous detection of asparagine, arginine, glutamine and GABA. An aqueous extract will be separated on silica gel with a solvent mixture of 3.5 ethyl acetate : 1.0 acetone : 3.5 methanol : 2.0 aqueous sodium hydroxide (0.3 N) followed by the detection with ninhydrin. The semiquantitative results were confirmed by HPLC. This method can also be used as a rapid check for the selection of hop and valerian batches with high amounts of the desired amino acids.

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