

**B023 Qualitative and quantitative investigations on St. John's Wort by HPTLC**

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Today St. John's Wort, *Hypericum perforatum*, is one of the most important herbal drugs on the market. Because its mechanism of physiological activity is still somewhat uncertain and controversial, quality control of drug, extract and medicinal products is difficult. HPTLC is widely used for fingerprint identification and stability tests of extracts of *Hypericum*. Several official and non-official methods have been published, all of which should be suitable for identification of the drug and detection of hypericin. However, all methods yield significantly different results and most of them do not allow to distinguish hypericin and pseudohypericin with certainty. For convenient detection and quantitation of hyperforin, another active principle of *Hypericum*, so far no suitable TLC method is available.

This poster describes work concerning a thorough comparison of methods for fingerprint identification of St. John's Wort from pharmacopoeias and the scientific literature with respect to performance, reproducibility and stability of the analyte in the chromatographic system. One system, ethyl acetate - dichloromethane - acetic acid - formic acid - water (100:25:10:10:11), was chosen, further optimized and evaluated for possible quantitative determination of hypericin and pseudohypericin using silica gel and silica gel DIOL as stationary phase.

Furthermore a new HPTLC method for detection and quantitative determination of hyperforin in raw material and Herbal Medicinal Products is presented. The method was validated according to ICH guidelines.

**B024 Comparative study of the hypericins and hyperforin contents of commercial Saint John's Wort preparations in relation to the recommended intake dosage**

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St. John's Wort (*Hypericum perforatum*) preparations are widely used as an effective herbal medicine for the treatment of anxiety and mild depressive disorders. The anti-depressive effect of this phyto-medicine involves multiple bioactive constituents and several neurochemical systems. The main active compounds are: the phloroglucins hyperforin and adhyperforin, responsible for the inhibition of serotonin, norepinephrine and dopamine re-uptake (1), the naphthodianthrone hypericin and pseudohypericin, affecting the dopamine turnover (2), and the flavonoids, that interact with the benzodiazepine binding sites of the GABA<sub>A</sub> receptor (3). However, unfavourable effects of these active compounds have also been reported (4). It seems then, that aiming at an adequate prescription, the contents of these active compounds in formulations may provide a more relevant information than the amount of the herbal drug or the amount of a dried extract.

This work describes the study of 17 commercial *Hypericum perforatum* preparations (capsules and tablets) aiming at the quantification of the major active compounds. The commercial preparations have been purchased in pharmacies and in herbal-dietetic food stores from different European countries. The analysis of all samples includes solvent extraction, sonication and chromatographic analysis. Basically, this methodology follows the chromatographic procedure described in the literature for the routine analysis of St. John's Wort preparations (5). The obtained results show significant differences in the contents of hyperforin, hypericin and flavonoids depending on the specific commercial preparation. It was also observed that, in some preparations, the recommended dosage do not strictly correspond with the contents of these active compounds. This fact results in very different recommended intake of hypericins and hyperforin per day ranging from 0.20 to 25 mg and from 0.35 to 55 mg, respectively.

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**References:** 1. Jensen et al. (2001) Life Sci. 68: 1593-1605. 2. Butterweck et al. (2002) Brain Res. 930: 21-29. 3. Baureithel et al. (1997) Pharm. Acta Helvet. 72: 153-1574. 4. Di Carlo et al. (2001) TIPS 22: 292-297. 5. Li et al. (2001) J. Chromat. B 765: 99-105.