A239 Plasma levels of hypericin in presence of procyanidin B2: a pharmacokinetic study in rats

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The biological evaluation of hypericin in various test models is hampered by its poor water solubility. In a recent study we showed that the water solubility of hypericin was remarkably enhanced in the presence of procyanidin B2 (1). In addition, a procyanidin fraction mainly consisting of procyanidin B2 significantly increased the *in vivo* effects of hypericin in the forced swimming test after acute administration (1). Thus, the present pharmacokinetic study was designed to find out whether the increased *in vivo* activity of hypericin in presence of procyanidin B2 might be correlated to increased plasma levels of the naphthodianthrone. Hypericin plasma levels of rats in presence and absence of procyanidin B2 were analyzed by reversed phase HPLC using fluorometric detection. According to our previous investigation, hypericin alone was administered orally in a dose of 0.2 mg/kg (**B**) and together with a 12.5 fold surplus of procyanidin B2 (**A**) (1). Plasma samples were collected between 1.5 and 24 hours. Median maximal plasma levels of **A** were detected after 4.5 h (c_{max} = 10.54 ng/ml), whereas for B plasma levels were 4.44 ng/ml. 9 h after application the difference between both treatment groups was still significant: **A** = 7.6 ng/ml; **B** = 3.0 ng/ml. No difference between **A** and **B** was observed after 24 h. Our present results show that plasma levels of hypericin can be enhanced in presence of procyanidin B2. It can be speculated that a significant accumulation of hypericin in rat plasma in presence of procyanidin B2 might be responsible for its increased *in vivo* activity. If this effect is due to a better absorption of hypericin from the intestinal tract or just a result of its improved solubility needs to be investigated in further studies.

Reference: 1. Butterweck, V. et al. (1998) Planta Med. 64: 291-294.

A240 Formulation of licorice topical preparation and evaluation of its effects on atopic dermatitis

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Glycyrrhiza glabra L. has been used in herbal medicine, for skin eruptions, including dermatitis, eczema, pruritus and cysts. In this research, the anti-inflammatory activity of licorice extract as topical preparation was evaluated on atopic dermatitis (1,2). The plant was collected and extracted by percolation with suitable solvent. The extract was standardized based on glycyrrhizinic acid by using titrimetry method. Different topical gels were formulated by use of different cosolvents and gelling agents. Physical stability (precipitation formulation, syneresis, viscosity and…) in 4, 25, 40 °C and microbial control tests were evaluated. After standardizing of topical preparations, the best formulations (1 and 2%) were studied in a double–blind preliminary clinical trial in comparison with base gel on atopic dermatitis during two weeks (18 persons in each group). Propylene glycol and glycerin were the best cosolvent for extract and carbapol 934P showed the best results in final formulations. The quantity of glycyrrhizinic acid was determined 20.3% in extract and 19.6% in topical preparation. 2% licorice topical gel was more effective than 1% preparation on atopic dermatitis ($P<0.05$). The inflammation of 60 and 89% of patients was decreased after the use of 1 and 2% topical gels respectively, during two weeks. The results showed that licorice extract can be considered as an effective agent on atopic dermatitis.

References: 1. D'Amelio, F.S. (1999) Botanicals. CRC Press. USA. **2.** Leung, A.Y. et al. (1996) Encyclopedia of common natural ingredients used in food, drugs and cosmetics. John Wiley & Sons Inc. New York.