BERBERINE
ADVERSE EFFECTS
BERBERINE – POTENTIAL ADVERSE EFFECTS AND CROSS-REACTIONS WITH OTHER DRUGS

WARNINGS AND PRECAUTIONS
1. Blood sugar level that has already been reduced due to Berberine takes, may further be lowered by other blood sugar reducer medicaments.
2. Berberine, taken in one bigger dose may cause stomach cramps and diarrhoea. Therefore, recommended daily dose of Berberine should be taken in multiple, proportionately divided smaller doses, during, or shortly after meals. For example the daily dose of 900-2000mg of Berberine divided into three or four measures.
3. It is PROHITED to administer Berberine along with the following drugs and formulas:
   3.1. Berberine blocks the functions of CYP1A1, CYP2D6, CYP2C9 and CYP3A4 enzymes. Therefore it is forbidden to use Berberine in conjunction with drugs where those enzymes are involved in the drug metabolism, like:
   3.2. Macrolide antibiotics (e.g.: Azithromycin, Clarithromycin)
   3.3. Phosphodiesterase-inhibitors
   3.4. Anticoagulant agents (e.g. with blood thinning drugs like: Warfarin)
   3.5. Formulas that contain thiopental or tolbutamide
   3.6. Along with Immunosuppressant drugs that contain Cyclosporine (e.g.: Sandimmun, Sandimmun Neoral)
   3.7. Drugs for treatments of psychiatric diseases (e.g. Antidepressants)
4. Do not use Berberine, if any of the following conditions exist:
   4.1. If liver- kidney- or heart disorder has been identified in your case;
   4.2. in case of gastrointestinal diseases;
   4.3. During pregnancy and breast-feeding;
5. Taking of Berberine is intended solely for adults. We recommend you to consult your doctor or pharmacist prior to taking Berberine in conjunction with other drugs or medicaments. Stop taking Berberine promptly, if you experience any kind of adverse effects!

BRIEF JUSTIFICATIONS
• Within the meta-analyzis of 14 studies (with participation of 1068 diabetes patients), 0,5-1,5 gramms of Berberine has been applied throughout 12 weeks with or without standard hypoglychemic treatment. During these studies, in some cases, patients have reported gastrointestinal complaints (e.g. diarrhea, crampings, and congestions) as well as abdominal discomforts, however, those complaints and discomforts have eased upon reduction of the daily taken dose, or upon taking the daily dose in several smaller portions. (Dong, Wang et al. 2012)
• Despite its CYP1A1 inhibition, Berberine disposes of a low toxic potential. (Vrzal, Zdarilova et al. 2005, Imanshahidi and Hosseinzaadeh 2008)
• Based on in vitro results, Berberine may interact with macrolide antibiotics (e.g. azithromycin), at the operation of potassium ion channels on the heart, leading to serious cardiotoxicity. (Zhi, Feng et al. 2015). Taking Berberine is considered to be safe for most people, however, it cannot be administered concurrently or simultaneously with macrolide antibiotics (e.g. Azithromycin and Clarithromycin)
• When directly injected in 5mg/kg dosage into skeletal muscles of laboratory animal models, Berberine could induce muscular atrophy, through increasing the Atrogin-1 expression. (Wang, Liu et al. 2010) Such effect however, is not known from clinical research studies.
• Due to its partial CYP3A4 enzym inhibitory attribution, concurrent taking of Berberine with Immunosuppressant medications containing cyclosporine (e.g. Sandimmun, Sandimmun Neoral), is not recommended. (Wu, Li et al. 2005, Xin, Wu et al. 2006) Dosage should be reduced during concomitant use of Berberine, since it may intensify side effects of cyclosporine.
• Do not use together with products containing warfarin and tolbutamide or thiopental. (Imanshahidi and Hosseinzaadeh 2008)
• It can detach the albumin-bound bilirubin, which can result in green colouration of the faeces. Under no circumstances should be used during pregnancy or neonatal jaundice and during the breastfeeding period. (Chan 1993, Imanshahidi and Hosseinzaadeh 2008)
BIBLIOGRAPHY