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Pharmacokinetic, bioavailability, metabolism and plasma protein binding evaluation of NADPH-oxidase inhibitor apocynin

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Introduction: Picrorhiza kurroa is a medicinal plant that grows in the Himalayan mountains and traditionally been used to treat disorders of the liver and respiratory tract in *Ayurvedic* system of medicine. Apocynin is a catechol based active constituent of *Picrorhiza kurroa* and has inhibitory effect on superoxide generating NADPH-Oxidase enzyme exhibiting potent anti-inflammatory activity.

Materials & Methods: To elucidate detailed pharmacokinetic profile of apocynin like bioavailability, pH dependent stability, *in vitro* metabolism and protein binding. To investigate these studies, rapid, sensitive, and simple high-performance liquid chromatography coupled with tandem mass spectrometry (HPLC–MS/MS) assay was developed and in rat and human plasma.

Results: Apocynin was rapidly absorbed, and peak plasma level achieved within five min; moreover, plasma levels were observed up to 48 hrs at 50 mg/kg dose in rat. Apocynin plasma protein binding was 83.41- 86.07 % in the rat and 71.39 - 73.34 % in human. Apocynin found completely stable in all three tested pH conditions (1.2, 6.8 and 7.4).

Conclusion: This report provide a detailed pharmacokinetics of apocynin, and these finding could help for the further development of apocynin and better elucidation of its pharmacological efficacy. Together, these data provide crucial information for its continued development toward the potential clinical candidate for inflammatory disease.

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Bioequivalence study of 20 mg Escitalopram formulations after single-dose administration in healthy Indonesian subjects

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Purpose: Escitalopram is an oral drug that is used to treating depression and generalized anxiety disorder. In this research we conducted the bioequivalence study of 20 mg Escitalopram formulations in healthy Indonesian subjects.

Methods: This study was conducted in randomized two-way crossover design with three-week -wash-out period under fasting condition on 23 subjects. Subjects were fasted 10 hours before each drug administration. Each subject received one tablet of 20 mg Escitalopram with 240 ml of water. Serial blood samples were collected at the following time points: before dosing 1, 1.5, 2, 2.5, 3, 3.5, 4, 5, 6, 7, 9, 12, 16, 24, 36, 48, and 72 hours after drug administration. The concentration of escitalopram in plasma was determined using LC-MS/MS method with Turbolon Spray (Electrospray) ionization mode. Pharmacokinetic parameters AUC0-t, and C_{max} were tested for bioequivalence after log-transformation of data.

Results: The result showed that the AUC0-72h still covered less than 80% of AUC0-∞ in more than 20% of the observations; therefore the AUC0-∞ and t1/2 were not evaluated. The point estimates and 90% confidence intervals (CI) for AUC0-t and C_{max} for escilatalopram were 92.64% (89.25-96.15%) and 95.31% (89.33-101.69%) respectively.

Conclusion: These results indicated that the two formulations of escitalopram were bioequivalent.

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