

P-120**The Double-Peak Phenomenon and Bioavailability Studies of a Quassinoid-Rich Standardized Extract of *Eurycoma Longifolia* Solid Dispersion Formulation**

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The quassinoid-rich standardized extract of *Eurycoma longifolia* extract (TAF2) was found to possess various biological activities. However, the poor oral bioavailability of the bioactive quassinoids, 13 α (21)-epoxyeurycomanone (EP) and eurycomanone (EN) in TAF2 necessitated a new formulation design to be developed. A lipid-based solid dispersion was formulated and the bioavailabilities of EP and EN were significantly improved compared with the conventional powder-filled capsules. A double peak phenomenon was identified in the plasma concentration-time curve. The gastric emptying and variability of GIT absorption, the probable causes of the double peak phenomenon, were studied by administering TAF2 solid dispersion to Sprague Dawley rats. As marker compounds, theophylline and sulfasalazine were used to determine the gastric emptying and variability of GIT absorption. The percentage absorbed of the markers was calculated using Wagner-Nelson method. The results showed that 50 % of theophylline was absorbed at 3 h, indicating the transit time of TAF2 solid dispersion from the stomach to the small intestine. Whereas, the 50 % of sulfapyridine, the metabolite of sulfasalazine, was absorbed at 8 h, reflected time of TAF2 solid dispersion to reach the colon. The concentration of TAF2 in colon was 74.36 % for EP and 80.27 % for EN, respectively. The results indicated that the delayed gastric emptying and colon absorption were the causes of double peak phenomenon. Thus, the delayed onset of *in vivo* activity of the quassinoids in *E. longifolia* was probably due to the delay of gastric emptying and colon absorption.

Keywords: *Eurycoma longifolia*, solid dispersion, double peak phenomenon.
