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Study of metabolites of jute (*Corchorus olitorius* Linn.) leaves using ESI/glow discharge-mass spectrometry

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A scientific field that deals metabolites is termed as metabolomics. Specifically, metabolomics is the "systematic study of the unique chemical fingerprints that specific cellular processes leave behind". For long time, jute (*Corchorus olitorius* Linn.) leaves have been used as an edible vegetable in some regions (such as Asia, Middle East, and Africa) of the world because the leaves contain therapeutically important metabolites which are considered as beneficial for human health. Such metabolites are beta-carotene, alpha-tocopherol, oleanolic acid, coumarinetc where alpha-tocopherol acts as an antioxidant. In this study, attempts have been made to investigate the metabolites present in jute leaves by mass spectrometry through fabrication of hybrid ion source of ESI and DBD glow discharge. A hybrid ion source could be useful to detect both the polar and non-polar metabolites present in biological samples simultaneously. In this work, jute leaves were taken as model samples and analyzed using a hybrid ion source of ESI and glow discharge. About 8 weeks aged jute leaves were collected from a jute field of Rangpur district, Bangladesh and then the leaves were air dried. The dried leaves were grinded with a mortar and preserved in air-tight bottles. About 50mg of the powered sample was taken in a 15 ml tube and mixed with 5ml methanol and shook for 4hrs at 25°C. About 1ml of the supernatant liquid was transferred into an Eppendorf tube and centrifuged. The clear solution was diluted 100 times for analysis. Results show that hybrid system gives much more abundant ions compared with ESI only. This suggests that non-polar components in extracts that are difficult to detect by ESI can be effectively ionized by barrier discharge ionization.

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Comparative pharmacokinetics of five cimicifugosides in dogs and rats after oral administration of Cimicifuga foetida L. extract

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Cimicifuga foetida L., a traditional Chinese medicine, has been developed for the treatment of women with menopausal syndrome in China (Brand name: XIMINGTING[R], XMT). The purpose of this study was to reveal the preclinical pharmacokinetics characteristic of this drug by comparing the pharmacokinetics of five main cimicifugosides (cimicifugoside H-2, cimicifugoside H-1, 23-epi-26-deoxyactein, cimigenol xyloside and 25-O-acetylcimigenoside) obtained from XMT in dogs and rats after oral administration with three doses respectively. The plasma concentrations of five cimicifugosides in both dogs and rats were determined by using an established high-performance liquid chromatography (HPLC) coupled with tandem mass spectrometry quantitative detection method. The pharmacokinetics parameters were estimated by WinNonLin software. The absorption feature of these cimicifugosides in plasma was almost similar between dogs and rats. There were significant differences in the pharmacokinetics properties among these cimicifugosides in dogs and rats. Among the five cimicifugosides, cimigenol xyloside showed the slowest elimination whereas cimicifugoside H-2 was the fastest in both dogs and rats. The values of AUC of cimigenol xyloside were the largest whereas those of cimicifugoside H-2 were the smallest in both dogs and rats. The higher concentrations of five cimicifugosides in liver after oral administration in rats showed that cimicifugosides was mainly accumulated in liver, however, limited distribution to the brain, indicated that cimicifugosides may have difficultly penetrating the blood brain barrier.

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