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Anti-viral value of alien addition lines between oilseed rape (*Brassica napus*) and Banlangen (*Isatis indigotica*) as new resource medicine

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Banlangen, or Chinese woad, the root of Songlan (*Isatis indigotica* L), is a very famous Traditional Chinese Medicine (TCM) for controlling epidemic diseases, especially respiratory virus like common cold and influenza. Previously, a set of monosomic alien addition lines between oilseed rape (*Brassica napus*) and *I. indigotica* was generated in order to improve the agronomy profile. In this study, we have compared the metabolites of each addition lines with the parents Banlangen and oilseed rape using LCMS-Qtof. Results highlighted that most of the member compounds of Nicotinate and nicotinamide pathway were up-regulated in Banlengen. Examples of the maximum enhanced compounds were 2-Oxobutanoic acid, Ormosanine, and Acetyltobramycin; while, Caprolactam, Benazepril, 15-demethoxyaclacinomycin were among down-regulated compounds in addition line Dd. Overlappings in metabolites changes among addition lines were also determined to estimate identical effects of transformed chromosomes. Overall, 10 pathways were elevated in the addition line Dd, among which Valine, leucine, and isoleucine degradation pathway was the highest elevated pathway. Addition lines Me and Mf were closely related lines, each having terpenoids as the most elevated metabolites in their cell contents. Least metabolites changes were detected in addition lines Mb and Mf, as compared to mother plant Banlengen. Euclidean distances analysis revealed that Indirubin, Indigotin, N-methoxy-indole-3-acetonitrile-2-C- β -D-glucopyranoside (MIAGP), (E)-2-[(1H-indol-3-yl)-cyanomethylene]-3-indolinone (CMIN), indigotiisocoumarin and 3-idoleacetamide possessed the Euclidean distances ≤ 1.0 with other bioactive compounds except for Indigotin, MIAGP, CMIN, and Indigotiisocoumarin. Putative antiviral compound analysis screened (S)-cyanomethyl-3-hydroxyoxindole (CHO) as a compound with maximum antiviral activities which can be used to cure influenza virus infection. This study evaluates addition lines on the basis of their antiviral efficacy and economic profile. Our study explores an alternative resource of Banlangen for yielding augmented quantities of antiviral compounds.

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