

## An Investigation of How Salad Rocket May Provide Its Own Defence Against Spoilage Bacteria

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**Abstract :** Members of the Brassicaceae family, such as rocket species, have high concentrations of glucosinolates (GLSs). GLSs and isothiocyanates (ITCs), the product of GLSs hydrolysis, are the most influential compounds that affect flavour in rocket species. Aside from their contribution to the flavour, GLSs and ITCs are of particular interest due to their potential ability to inhibit the growth of human pathogenic bacteria such as *E. coli* O157. Quantitative and qualitative analysis of glucosinolate compounds in rocket extracts was obtained by Liquid Chromatography-Mass Spectrometry (LC-MS). Each individual component of non-volatile GLSs and ITCs was isolated by High-Performance Liquid Chromatography (HPLC) fractionation. The identity and purity of each fraction were confirmed using Ultra High-Performance Liquid Chromatography (UPLC). The separation of glucosinolates in the complex rocket extractions was performed by optimizing a HPLC fractionation method through changing the mobile phase composition, solvent gradient, and the flow rate. As a result, six glucosinolates compounds (Glucosativin, 4-Methoxyglucobrassicin, Glucotropaeolin GTP, Glucoiberin GIB, Diglucothiobenin, and Sinigrin) have been isolated, identified and quantified in the complex samples. This step aims to evaluate the antibacterial activity of glucosinolates and their enzymatic hydrolysis against bacterial growth of *E. coli* k12. Therefore, fractions from this study will be used to determine the most active compounds by investigating the efficacy of each component of GLSs and ITCs at inhibiting bacterial growth.

**Keywords :** rocket, glucosinolates, *E. coli* k12., HPLC fractionation

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