

Evaluation of *Brassicaceae* Microgreens as Functional Foods using Nutritional and Metabolite Profiling

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Abstract—Microgreens are being termed as edible functional foods but very limited scientific studies validate their potential. This study is focused on evaluating the potential of four microgreens belonging to brassicaceae family using metabolite and nutritional profiling. First, in-vitro cultivation under standard controlled growth conditions were established for pak choi (*Brassica rapa* subsp. *chinensis*), mustard (*Brassica juncea*) and two varieties of radish (*Raphanus raphanistrum* subsp. *sativus*) microgreens. Second, GC-MS based metabolite profiling of all the microgreens highlighted a range of phytochemicals AA, organic acids, etc including health beneficial ones comprehensively. Phytochemical variations and similarities among the microgreens were also captured using metabolomics approaches. Finally, comparative nutritional analysis focused on the levels of proteins, carbohydrates, lipids, total phenols and anti-oxidant assay (DPPH) established their health beneficial potential. Taken together, this is the first comprehensive study on the phytochemical potential of microgreens.

Keywords: Phytochemicals; Microgreens; Metabolomics; Nutritional analysis; GC-MS.