

Chapter 7: Formulation Approaches for Herbal Nutraceuticals

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Abstract: The nutraceutical market is expanding all over the world due to the rising demand of the consumers on natural, safe and effective health promoting products. The intersection of the nutrition theory and pharmacology is the botanical nutraceuticals which provide other avenues to solve the disease other than the mere nutrition. Nonetheless, its low solubility, low bioavailability, instability and absence of reproducibility in phytochemical content are challenges to their clinical translation. Such situations have led to the use of the new formulation techniques such as liposomes phytosomes, nanoemulgel and Nanostructured lipid carriers (NDS) and self-micro emulsifying drug delivery systems (SMEDDS) in addition to phytochemical methods. These are new methods that enhance uptake, stability and localized release of phytoprinters like flavonoid, polyphenolics and terpenoids. Further, herbal nutraceutical research on precision nutrition and tailored treatment is being propelled by the con-capturing of computational model, green extract and artificial intelligence establishment of formulation discovery. Another factor that comes out as a result of the review is a comparative study on the new and old generation formulation strategies, characterisation techniques and regulatory stand point perspectives in relation to an anticipated production of safe, effective and quality addressed herbal nutraceutics.

Keywords: Herbal nutraceuticals, formulation methodology, nanoformulations, phytosomes, bioenhancement of bioavailability, self-emulsifying drug delivery system (SEDSS) phytoconstituents green extractions artificial intelligence (AI)-assisted formulation designing.

7.1. Introduction

Herbal nutraceuticals are among one of the fastest expanding categories in the global health and wellness market due to their use, traditional wisdom and ethno-medicinal claims with validated modern phytochemical evidences. Those products, containing