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METABOLIC PROFILING AND SKIN PENETRATION STUDY OF SERICOSIDE USING HR-MAS NMR AND HPLC-MS TECHNIQUES

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Sericoside is a naturally occurring bioactive compound derived from *Terminalia sericea*, a medicinal plant known for its rich array of bioactive components such as saponins, flavonoids, tannins, and triterpenic acids. These constituents provide antioxidant, antimicrobial, and skin-rejuvenating effects. Sericoside is important for enhancing skin health and maintaining the integrity of connective tissues, highlighting its potential applications in dermatology and anti-aging treatments [1]. The objective of this thesis is to investigate the potential of Sericoside conducting *in vitro* experiments focused on assessing the cytocompatibility and regenerative potential of Sericoside in SH-SY5Y neuroblast-like cells. To evaluate the Sericoside metabolic activity *ex vivo* analysis on cells using HR-MAS NMR spectroscopy, was performed. This methodology enabled us to compare cellular activity and metabolic alterations effectively. Preliminary findings indicated notable changes in choline-containing compounds—crucial for membrane biosynthesis—correlated with cell regeneration outcomes measured via scratch tests. These observations suggest a relationship between membrane metabolism and regenerative responses modulated by sericoside, offering valuable insights into its biological effects. In addition, an *ex vivo* transdermal delivery study was performed using Franz diffusion cells to evaluate the skin penetration of Sericoside. The amount of compound absorbed into the skin layers and receptor fluid was quantified employing HPLC-MS analysis, offering detailed insights into its percutaneous absorption profile.

References

1. M. Meunier, et al. (2021) "Skin Cellular Reprogramming as an Innovative Anti-Aging Strategy for Cosmetic Application: A Clinical Study of Sericoside", *Front. Biosci. (Landmark Ed)* 2023, 28(6), 112. <https://doi.org/10.31083/j.fbl2806112>