

DiaPatch™

A nano-emulsified phyto-drug for transdermal treatment of diabetes

“Healing Through the Skin.”

Technology

The invention relates to a nano-emulsified phyto-drug formulation designed for the transdermal treatment of diabetes, particularly Type II Diabetes Mellitus. It uses diosgenin, a natural antidiabetic compound, encapsulated in an oil-in-water nanoemulsion matrix composed of sesame oil and bottle gourd seed oil as the oil phase, with Tween 80 and glycerol as non-toxic emulsifiers. This nanoemulsion enhances diosgenin's solubility, stability, and skin permeability, allowing for controlled and sustained drug release into systemic circulation. The formulation is prepared using a low-energy, ambient temperature process, making it cost-effective and preserving thermolabile bioactives. Delivered as a gel, cream, or transdermal patch, the system provides a non-invasive, natural, and patient-friendly alternative to oral or injectable diabetes treatments, improving bioavailability and treatment compliance.

Market need

Diabetes affects over 500 million people globally, with Type II Diabetes Mellitus being the most prevalent. Current oral and injectable treatments often suffer from low bioavailability, short half-lives, gastrointestinal irritation, and invasive administration, leading to poor adherence and secondary complications. There is an increasing market demand for non-invasive, natural, and patient-friendly drug delivery systems. The proposed nanoemulsified diosgenin formulation directly addresses these challenges by offering a plant-based, transdermal therapeutic alternative that improves patient comfort, drug stability, and long-term glycemic control.



Features

- Utilises diosgenin, a natural compound extracted from Dioscorea rhizome and other medicinal plants, minimising synthetic drug side effects.
- Improves diosgenin solubility, enhances transdermal absorption, and increases bioavailability.
- Non-invasive delivery
- Cost-effective, scalable, and environmentally friendly preparation at room temperature.
- Adaptable as a gel, patch, or cosmetic-grade transdermal product.



Benefits

- Enhanced patient compliance due to painless, easy-to-use application.
- Reduced side effects compared to oral or injectable hypoglycemics.
- Eco-friendly and low-cost production.
- Potential use beyond Type II Diabetes, including gestational and maturity-onset diabetes.



Industry

Drug discovery

Potential applications

- Transdermal treatment of Type II Diabetes, providing controlled drug release.
- Patient-friendly alternative to oral and injectable therapies, enhancing compliance.
- Plant-based antidiabetic therapy using natural bioactive compounds like diosgenin.
- Topical formulations including gels, creams, and patches for non-invasive administration.
- Improved bioavailability of antidiabetic compounds through nano-emulsion technology.

Creators

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Stage of development

Early stage

Intellectual property

Patent Protection

Desired relationship

Co-development, Investors