

**OBJ** LIMITED

## Introducing **eM-Patch**

YOUR NEW SOURCE OF MARKET ADVANTAGE

Your existing ingredients, compounds and products will be able to access new applications and new market segments using our **eM-Patch** dynamic transdermal delivery technology.

This may be exactly what you are looking for to enhance your market reach and to increase your competitive market position at low development cost.



Specialised magnetic fields power the machinery and communications of the modern world. When used in the biosciences they deliver energy without the need for physical contact, interact at the atomic level with ingredients, and can utilize body heat to manage physio chemical processes.

For consumers, magnetic enhanced delivery is simple, comfortable, requires reduced time commitment and delivers faster results, using larger and more biologically important molecules.

For brand owners, magnetic enhanced delivery is low cost with long shelf life, requires no power, is suitable for small and large molecules, charged or uncharged species, lipophilic and hydrophilic ingredients and can enhance bioavailability by over 10 times compared with the same product applied topically.

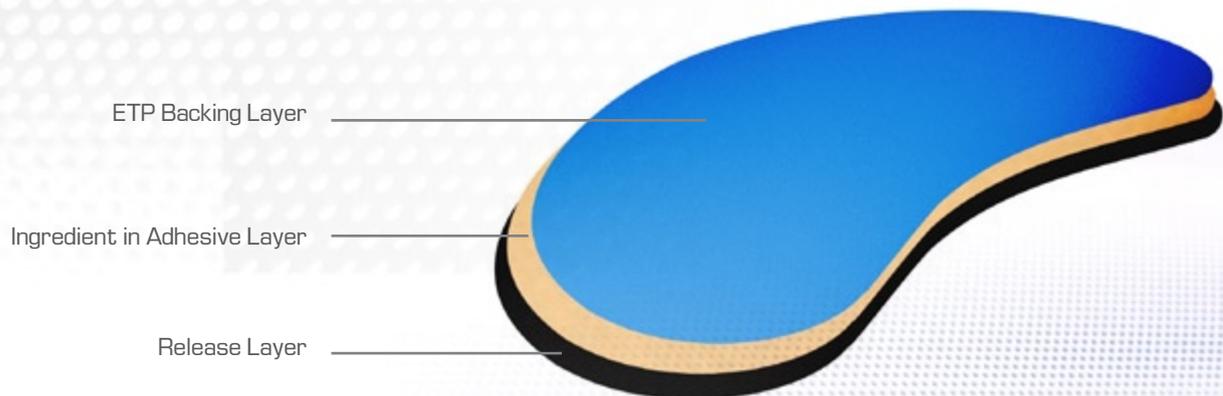


## INTRODUCING THE eM-Patch

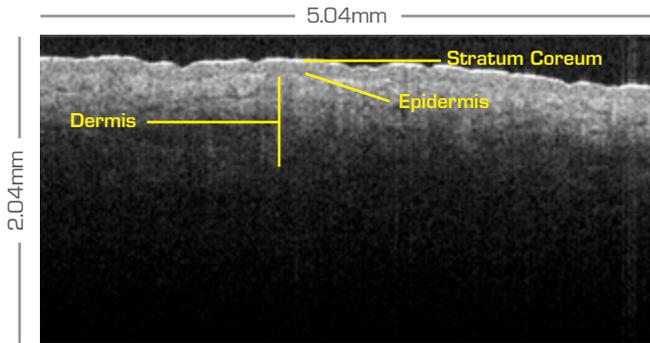
**eM-Patch** is a new low cost *active* cosmetic patch and mask technology based on magnetic field effect that provides rapid onset, shorter application periods and deeper penetration for proprietary and genetic ingredients, molecules and peptides.

**eM-Patch** combines the enhanced magneto-delivery capabilities of the proprietary ETP™\* material technology with custom formulations and manufacturing services to provide high performance patch and mask products without the need for power, batteries or formulation limitations.

**eM-Patch** and ETP™ are products of OBJ Limited, an independent Australian developer of patch products and solutions for the cosmetic, dermatology and pharmaceutical industries.



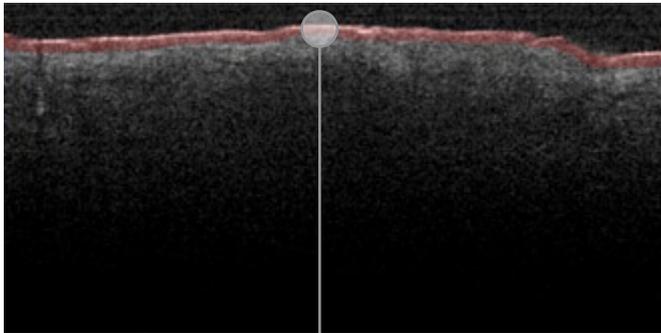
OBJ Limited has conducted a wide range of in vivo and in vitro laboratory and University studies to demonstrate the efficacy of the **eM-Patch** technology



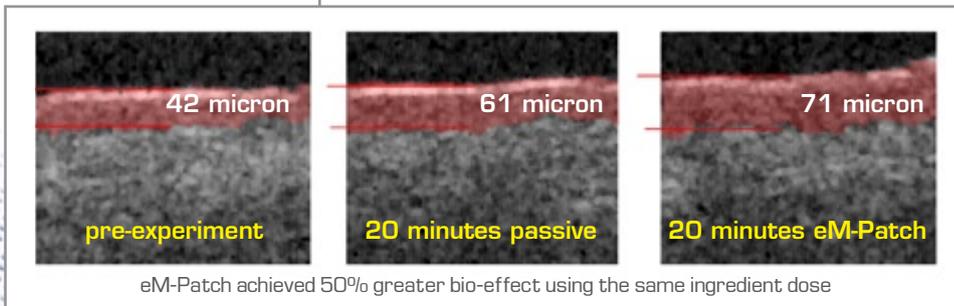
OCT laser images reveal changes in epidermis of living skin

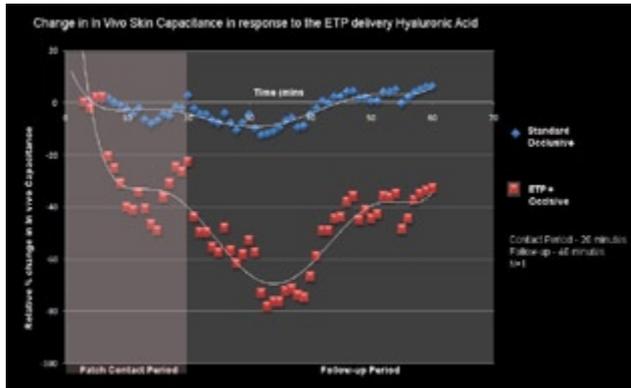
Optical Coherence Tomography (OCT) is an imaging technique that uses laser light scattering to construct a detailed image of the sub surface structures of living skin at a resolution similar to a standard microscope. OCT produces 3 dimensional images of the skin's microstructures to a depth of around 3 mm. It constructs these images by measuring differences in laser light scattering by the various tissues and compartments of the skin. OCT allows the identification of the stratum corneum, the epidermis and the dermis in living tissues under actual delivery conditions.

In vivo OCT Study using 5% Urea Gel

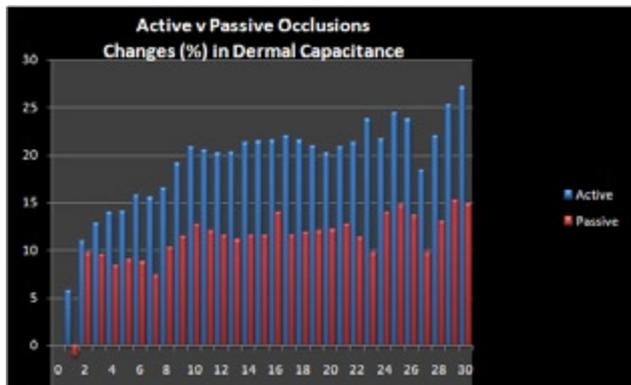


The highlighted areas show changing epidermal morphology over a 20 minute period, comparing **eM-Patch** enhanced delivery with passive occlusion. Under **eM-Patch** enhanced delivery, a 5% urea gel created a downstream bio effect increase in total epidermis thickness of 29 microns compared with 19 microns under occlusion alone.

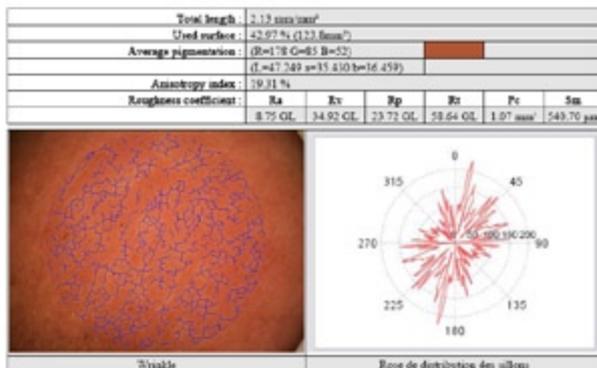




eM-Patch delivered intact HA deeper into the epidermis



eM-Patch created twice the hydration from the same moisturizer



25% reduction in wrinkle profile using eM-Patch compared with topical

## Additional in vivo study techniques :

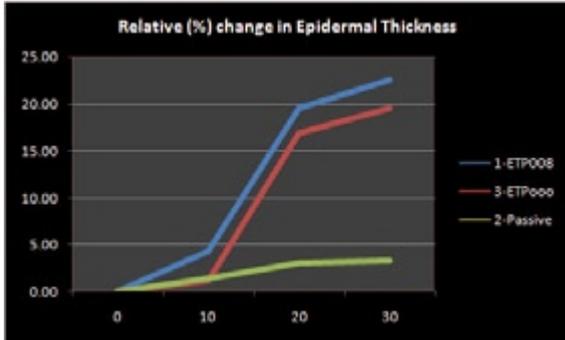
Hyaluronic Acid (HA) is a humectant and binds to the loosely associated water in the epidermis once it penetrates the stratum corneum. In the study (left) skin capacitance was used to monitor in vivo epidermal hydration over a 60 minute period. The significant reduction in epidermal capacitance achieved by **eM-Patch** during the period of contact with the skin contrasts with minimal biological effects of HA delivered passively. The reversal of trend shows the rapid reversibility of the **eM-Patch** effect.

Dermal hydrating and moisturizing products increase skin capacitance by adding to the total non-bound epidermal water. When delivered effectively, they cause a rapid and deep increase in epidermal water reserves. When **eM-Patch** was tested in vivo using a commercial moisturizing compound, substantial downstream bioeffect differences were observed when compared with passive occlusion alone.

Micro-Relief shows changes in the underlying morphology, similar to that seen in OCT images. These changes are reflected in the skin as visible wrinkle reductions. When **eM-Patch** was tested using a leading commercial penta-peptide formulation, the change in wrinkle profile improved by an average of 27% when compared with normal topical delivery.

**All these techniques are available to assist in the development of eM-Patch implementations to suit your ingredients, formulations and products.**

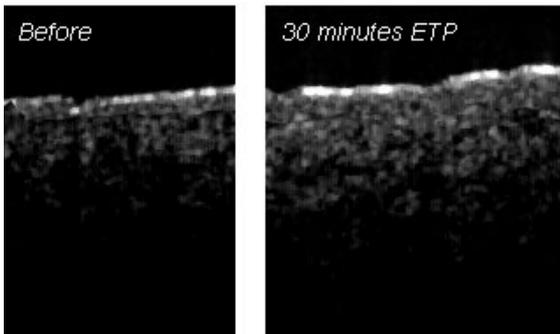
The **eM-Patch** magnetic enhanced delivery system and the ETP magnetic arrays were developed by OBJ Limited and are firmly grounded in science, clinically proven, scientifically demonstrable and based on three solid laws of Physics...



eM-Patch delivered 20 fold increase in 20 minutes compared with topical



eM-Patch focused ingredients at critical penetration pathways



Delivery is enhanced by eM-Patch's "super-occlusion"

### Diamagnetics - Directionality in diffusion

Ingredient molecules diffuse from a product into the skin by random directionless motion of molecules. However, the majority of cosmetic actives are made up of diamagnetic molecules, meaning they are repelled by certain magnetic fields due to the rotational behavior of their paired electrons. **eM-Patch** is designed to enhance diamagnetic forces to give direction and energy to diffusion, resulting in increased bioavailability and reduced time to onset.

### Electro-osmosis- a less torturous Route

Cosmetic products penetrate the stratum corneum via the inter-cellular or torturous route. **eM-Patch** has field structures that work with body heat (thermodynamics) to open osmotic shunts and appendageal pathways to provide faster onset, reduced lag time and greater control over dermal distribution.

### Magneto-Physiochemistry - hygroscopic expressway

**eM-Patch** temporarily and reversibly alters stratum corneum and epidermal water binding and retention to provide a means of managing the hydrophilic and lipophilic pathways.

OBJ Limited is an independent transdermal drug delivery company that provides a full patch assessment, development, formulation and manufacturing service to the pharmaceutical, cosmetic and dermatology industries. Working with OBJ provides a low risk and confidential solution and provides an efficient and reliable means of developing new patch products using new ingredients or as a means of extending product life.

**Q1- How well will it work with my product?**

OBJ has a range of in-vivo and in-vitro feasibility assessments tools designed to demonstrate the level of benefit that the **eM-Patch** technology can provide to your products and ingredients. We're ready to test.

**Q2 - How to create the right patch formulation?**

OBJ provides a formulation service, headed by world leading experts, to translate existing products, formulations and ingredients into patch formats to match your clinical and commercial needs.

**Q3- How we achieve special product performance?**

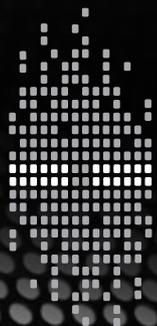
OBJ optimises magnetic arrays to match the target ingredient, formulation and delivery profile to ensure optimum performance. The results may be patentable and may expand product IP protection.

**Q 4 - How to test the patch product?**

OBJ provides a full prototyping and clinical testing facility or will happily work with client teams or selected independent testing facilities.

**Q5 - Who manufactures and supplies?**

OBJ partners with a number of international patch manufacturers in Europe, USA and Asia who can provide a wide range of product options and specifications. OBJ also offers licensing and supply facilities for custom **eM-Patch** materials for manufacture and integration at client managed facilities.



**OBJ** LIMITED

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