OBJ LIMITED

transdermal drug delivery technology

PRESS RELEASE

6 April 2006

OBJ DRUG DELIVERY TECHNOLOGY TO BE PRESENTED AT INTERNATIONAL CONFERENCE

The company is pleased to provide shareholders with a copy of the presentation poster titled:

DERMAPORTATION, A NOVEL SKIN PENETRATION ENHANCEMENT TECHNOLOGY: PRELIMINARY INVESTIGATIONS WITH NALTREXONE

to be presented by Associate Professor Heather Benson at the ***Perspectives in Percutaneous Penetration*** conference (PP2006) to be held in La Grande Motte in France between April 18-22.

PPP2006 is the 10th International Conference on Perspectives in Percutaneous Penetration and Dermochannels and is the leading symposium on minimally invasive drug delivery technology.

END:

Transdermal drug delivery technology

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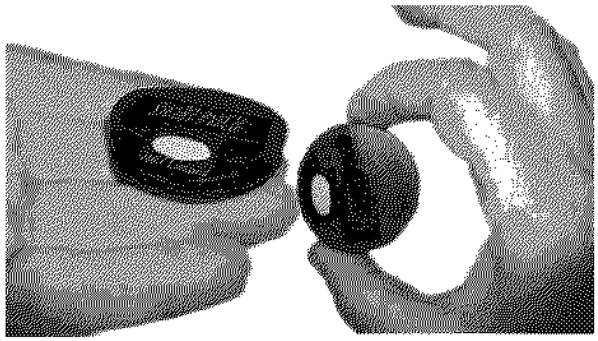
Background to the Announcement

OBJ Limited is a drug delivery company, specializing in electronic "drug patch" technologies that allow drugs, vaccines, therapeutic agents and cosmetic compounds to be delivered more effectively and more efficiently through-the-skin.

The OBJ Dermaportation system has been shown to manage and control the transdermal delivery of a broad range of drugs and therapeutic agents ranging from small difficult molecules such as Caffeine, through to large macro-globular proteins drugs such as vaccines.
OBJ's technology has been independently proven in both in-vitro and in-vivo studies and can manage a broader range of molecular sizes, structures and valencies than other active or passive drug delivery systems.

OBJ has been successful in managing the through-the-skin delivery of drugs used in the inflammation, pain, cancer and cosmetic fields.

OBJ's technology is low cost, and can be incorporated into reusable drug patches, (as illustrated) disposable single use drug patches and in a range of packaging systems for OTC and retail use.



Sustainable Benefits

Low cost and controlled through-the-skin delivery of drugs, hormones, vitamins, vaccines, anti-bodies and anti-aging molecules has long been the desire of the pharmaceutical industry. It would provide economic, safety and efficacy benefits to the pharmacology, medical, veterinary and cosmetic industries. Side effects could be reduced by localized delivery and programmed delivery rates. Needle stick injuries and needle disposable problems could be eliminated while the reduction in the level of skill required for application could significantly reduce total cost of many health programmes. These clear commercial benefits may only be achievable if the skin's natural barrier effect can be overcome.

OBJ is the first company to create a broad spectrum through-the-skin delivery system that is kind to the skin, completely reversible, yet can handle drugs range from the small difficult molecules up to the largest and most complex proteins and anti-bodies. OBJ manages an extensive IP portfolio and prosecutes patent applications throughout the world.

Independence of Results

OBJ contracts its drug and technology testing programs to independent and respected organisations, such as Western Australian Biomedical Research Institute, Western Australian Institute for Medical Research, Curtin University of Technology and Murdoch University. The high level of independence and international accreditation means that the results attributable to OBJ's proprietary technology can be published and presented at major medical and scientific conferences and forums.

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DERMAPORTATION, A NOVEL SKIN PENETRATION ENHANCEMENT TECHNOLOGY: PRELIMINARY INVESTIGATIONS WITH NALTREXONE

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BACKGROUND

Dermaportation is a non-contact form of active drug delivery which has been developed by a Western Australian based biotechnology company, OBJ Ltd. Dermaportation combines a number of features of both iontophoresis and electroporation to enhance active diffusion and skin penetration. It has potential for increased therapeutic effectiveness and faster onset of action of drugs applied topically to the skin. The aim of the current study was to provide initial evaluation of the skin penetration enhancement potential of Dermaportation on the *in vitro* penetration of naltrexone hydrochloride across human epidermis.

Naltrexone hydrochloride (NTX) is a potent competitive opioid receptor antagonist (Fig 1). Administered orally it is used for the treatment of opioid addiction and alcohol dependence. However NTX undergoes extensive first-pass metabolism and has oral bioavailability estimates in the range of 5-40%. NTX is also hepatotoxic and has the capacity to cause hepatocellular injury. Transdermal delivery could circumvent such problems and allow lower doses to be used.

AIMS

The aim of the current study was to provide initial evaluation of the skin penetration enhancement potential of Dermaportation on the *in vitro* penetration of NTX across human epidermis.

METHODS

A high performance liquid chromatography (HPLC) method for quantification of NTX was developed and validated. Human skin was obtained following abdominoplasty surgery under existing approval from the Human Research Ethics Committee of Curtin University. The epidermis was heat separated from the dermis using standard procedures (Kligman and Christophers 1963). The epidermis was mounted in Franz-type diffusion cells with the stratum corneum facing the donor compartment. Skin integrity was determined by conductance measurement. The receptor compartment was filled with phosphate buffered saline (PBS) pH 7.4, stirred continuously and maintained at 37°C throughout the experiment. NTX solution (0.5% w/v of NTX in PBS pH 7.4) was applied to the donor side of the epidermis. Dermaportation was applied from time 0 to 4 h. Samples (250 µL) were removed from the receptor fluid at time points up to 8 h. At each time point the receptor fluid volume was replaced with fresh phosphate buffered saline preheated to 37°C. Four Dermaportation cells and four passive cells (no Dermaportation) were conducted. The content of NTX in receptor fluid samples was analysed by HPLC with ultraviolet detection (at 210 nm) using the validated assay procedure.

RESULTS

The cumulative amount of NTX permeating to the receptor verses time was plotted for Dermaportation and passive cells (Fig 3). There was a substantial increase in both initial diffusion and cumulative amount of NTX penetrating the epidermis over 8 h with Dermaportation as compared to passive diffusion. After approximately 2 h the amount of NTX in the receptor is about 20% of the donor, contributing to the shape of the curve from 2 to 8 h. Flux values for NTX during this initial period (0-2 h) are estimated at 152.6 and 1.6 µg/cm².h for Dermaportation and passive diffusion respectively.

CONCLUSIONS

This preliminary investigation of the novel Dermaportation skin penetration enhancement technology is encouraging. Further investigation of the technology in vitro and in vivo is ongoing.

REFERENCES

Kligman A, Christophers E. Preparation of isolated sheets of human stratum corneum. Arch Dermatol 88: 70-73 (1963)

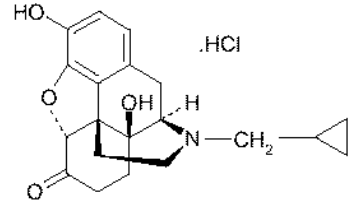

Figure 1 Naltrexone hydrochloride (NTX)

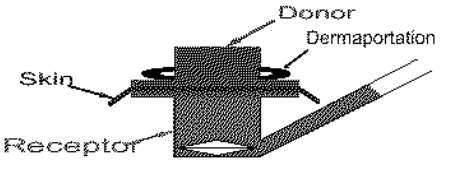

Figure 1 Franz-type diffusion cell with Dermaportation

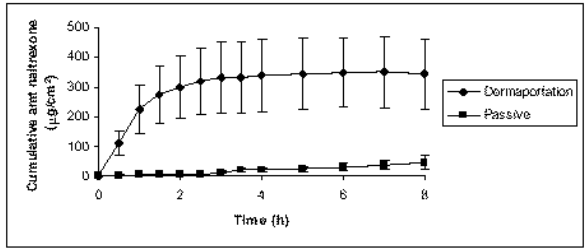

Fig 3: Cumulative amount of NTX penetrating human epidermis following application of 0.5% NTX with Dermaportation (0-4 h) or passive control (mean±sd n = 4)

DERMAPORTATION CLINICAL CASE STUDIES:

hyaluronic acid applied with Dermaportation in the treatment of:

1. wounds associated with diabetic neuropathy
2. Superficial burns