

## NICOTINAMIDE PENETRATION STUDY HIGHLIGHTS THERAPEUTIC BENEFITS OF OBJ TECHNOLOGY

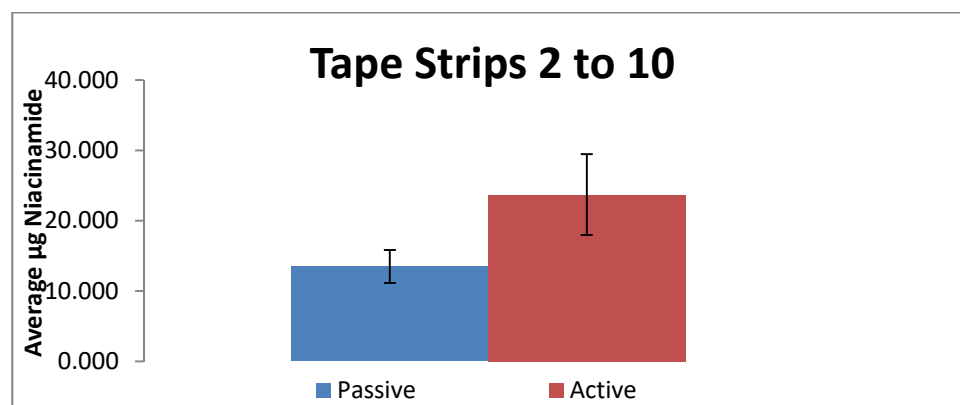
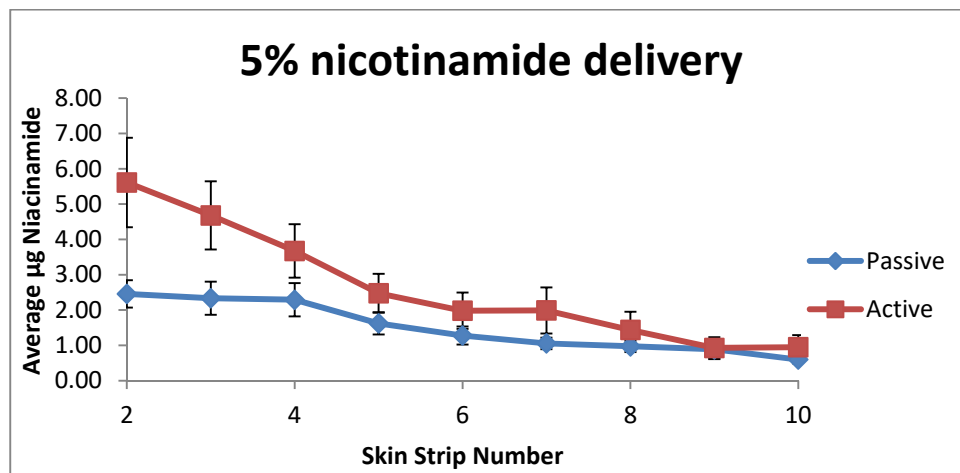
**OBJ Limited (ASX: OBJ)** is pleased to announce that initial in vivo skin penetration studies have shown that the Company's new consumer skin applicator product delivers almost 200% more nicotinamide (Vitamin B3) into the skin compared to standard topical delivery.

Topical nicotinamide has been suggested as a potent anti-skin cancer treatment for areas of the body that are consistently exposed to the sun as well as other individuals. In a study coordinated by OBJ Non-Executive Director and Perth dermatologist Dr Christopher Quirk, a 5% nicotinamide formulation was made and applied using OBJ's magnetic micro-array technology and its delivery was compared to a normal manual application.

The OBJ nicotinamide delivery system uses the Company's proprietary magnetic micro-array technology to deliver high levels of nicotinamide in an easy to use applicator.

The formulation was applied for just 30 seconds and the formulation was left to absorb into the skin for a period of 30 minutes before analysis. The micro-array-backed silicone brush applicator performed well when applied to the skin with excellent coverage and minimal formulation retention. A two-fold enhancement of nicotinamide penetration into target tissues is believed to set a new standard in nicotinamide delivery into local tissues.

### 5% nicotinamide formulation – skin penetration study



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The findings of the study follows international publication of important data by several groups on the use of nicotinamide as a means of reducing the progression of common solar keratosis to the more life-threatening melanoma forms of skin cancer. Data also suggests that the use of nicotinamide may significantly reduce the re-occurrence of melanoma in those previously successfully treated.

“Nicotinamide has been studied extensively with both systemic and topical application. Our aim was to develop the most effective nicotinamide delivery application with simple compliance and to avoid the first pass metabolism issues that limit the bioavailability and side effects of orally administered nicotinamide,” explained Dr Quirk.

“Our experimental delivery method indicates higher concentrations of nicotinamide delivered to the target tissues, which is expected to result in superior efficacy in those areas of clinical use. These include pigmentation, aging and prophylaxis of skin cancer, and pre-cancers in patients both prone to non-melanoma skin cancer and patients who have already had a non-melanoma skin cancer previously treated.”

OBJ will now use these results to attract an industry partner active in this market.

The human skin tape stripping technique employed by OBJ to determine the levels and depth of penetration of nicotinamide is the preferred method of determining the penetration level of actives by the US Food and Drug Administration (FDA).

The use of nicotinamide as a means of reducing the number of actinic keratoses and the progression of these into squamous cell carcinoma has been the focus of scientific studies for several years.

Recent scientific papers on the therapeutic benefits of nicotinamide are as follows:

J Eur Acad Dermatol Venereol. 2017 Sep;31 Suppl 5:13-17. doi: 10.1111/jdv.14375.  
New and current preventive treatment options in actinic keratosis Arenberger P1, Arenbergerova

Photodermatol Photoimmunol Photomed. 2017 Jul 5. doi: 10.1111/phpp.12328.  
Melanoma and nonmelanoma skin cancer chemoprevention: A role for nicotinamide?  
Minocha R1,2, Damian DL1,2,3, Halliday GM1,2.

J Cosmet Dermatol. 2017 May 16. doi: 10.1111/jocd.12338. [Epub ahead of print]  
Assessment of the efficacy and safety of a new complex skin cream in Asian women: A controlled clinical trial.  
Jung YS1, Lee JH1, Bae JM1, Lee DW1, Kim GM1.

Skin Therapy Lett. 2017 Sep;22(5):1-4.  
Vitamin B Derivative (Nicotinamide) Appears to Reduce Skin Cancer Risk.  
Nazarali S1, Kuzel P1.

Eur J Dermatol. 2017 Aug 1;27(4):382-385. doi: 10.1684/ejd.2017.3025.  
Prevention of non-melanoma skin cancers with nicotinamide in transplant recipients: a case-control study.  
Drago F1, Ciccarese G1, Cogorno L1, Calvi C1, Marsano LA1, Parodi A1.

Australas J Dermatol. 2017 Aug;58(3):174-180. doi: 10.1111/ajd.12631. Epub 2017 Mar 20.  
Nicotinamide for skin cancer chemoprevention.  
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Int J Cancer. 2017 May 1;140(9):2023-2031. doi: 10.1002/ijc.30630. Epub 2017 Feb 14.  
Niacin intake and risk of skin cancer in US women and men.  
Park SM1,2,3, Li T1, Wu S4,5, Li WQ4,6, Weinstock M4,6,7,8, Qureshi AA1,4,6,8, Cho E1,4,6.

J Am Acad Dermatol. 2017 Mar;76(3S1):S91-S99. doi: 10.1016/j.jaad.2016.09.040. Epub 2016 Dec 27.  
Current challenges in photoprotection.  
Lim HW1, Arellano-Mendoza MI2, Stengel F3.

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Br J Dermatol. 2016 Dec;175(6):1363-1365. doi: 10.1111/bjd.14648. Epub 2016 Sep 20.  
Oral nicotinamide reduces transepidermal water loss: a randomized controlled trial.  
Chen AC1, Martin AJ2, Dalziel RA1, Halliday GM1, Damian DL1,3

N Engl J Med. 2016 Feb 25;374(8):789-90. doi: 10.1056/NEJMc1514791#SA2.  
Nicotinamide for Skin-Cancer Chemoprevention.  
Drago F1, Ciccarese G1, Parodi A1.

Nicotinamide for Skin-Cancer Chemoprevention. [N Engl J Med. 2016]

A Phase 3 Randomized Trial of Nicotinamide for Skin-Cancer Chemoprevention. [N Engl J Med. 2015]

CA Cancer J Clin. 2016 Mar-Apr;66(2):91-2. doi: 10.3322/caac.21299. Epub 2016 Jan 11.  
Nicotinamide found to reduce the rate of nonmelanoma skin cancers in high-risk patients.  
Barton MK.

A Phase 3 Randomized Trial of Nicotinamide for Skin-Cancer Chemoprevention. [N Engl J Med. 2015]

Cutis. 2015 Nov;96(5):337-42.  
A novel cream formulation containing nicotinamide 4%, arbutin 3%, bisabolol 1%, and retinaldehyde 0.05% for treatment of epidermal melasma.  
Crocco EI1, Veasey JV1, Boin MF1, Lellis RF2, Alves RO1.

Lancet Oncol. 2015 Dec;16(16):e591. doi: 10.1016/S1470-2045(15)00460-X. Epub 2015 Oct 30.  
Nicotinamide yields impressive results in skin cancer.  
Bagcchi S.

N Engl J Med. 2015 Oct 22;373(17):1618-26. doi: 10.1056/NEJMoa1506197.  
A Phase 3 Randomized Trial of Nicotinamide for Skin-Cancer Chemoprevention.  
Chen AC1, Martin AJ, Choy B, Fernández-Peñas P, Dalziel RA, McKenzie CA, Scolyer RA, Dhillon HM, Vardy JL, Krickler A, St George G, Chinniah N, Halliday GM, Damian DL.

Am Health Drug Benefits. 2015 Aug;8(Spec Issue):13-4.  
Oral Nicotinamide Prevents Common Skin Cancers in High-Risk Patients, Reduces Costs.  
Starr P.

Curr Probl Dermatol. 2015;46:143-9. doi: 10.1159/000366550. Epub 2014 Dec 18.  
Oral nicotinamide and actinic keratosis: a supplement success story.  
Kim B1, Halliday GM, Damian DL.

Pharm Dev Technol. 2016;21(1):116-20. doi: 10.3109/10837450.2014.971378. Epub 2014 Oct 16.  
Evaluation of nicotinamide microemulsion on the skin penetration enhancement.  
Boonme P1,2, Boonthongchuay C1,2, Wongpoowarak W1, Amnuakit T1.  
product

## About OBJ

OBJ develops proprietary magnetic micro-array drug delivery and product enhancement technologies for the pharmaceutical, healthcare and consumer goods sectors. OBJ partners companies in the design and development of next generation products using physical science rather than chemistry to provide new levels of product performance without the cost of reformulation or new ingredient approvals.

OBJ offers a portfolio of proprietary technologies and supports partners by providing IP-protected market exclusivity, expertise in magnetic array design, feasibility and efficacy and claims testing, engineering and production.

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## About OBJ's Technologies

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OBJ has developed a number of physical enhancement technologies based on the interactions between ingredient molecules and weak atomic forces. These influence the movement and penetration through the skin of drugs, active ingredients and formulations at the molecular level.

Complex 3-D magnetic fields produced by low cost micro-arrays or powered electromagnetic inductors have the ability to repulse certain molecules to enhance diffusion and to alter the permeability of biological and non-biological targets.

OBJ's low cost micro-array film technology that utilise diamagnetic repulsion, induced permeation and energy redirection has already reached international markets to provide OBJ's Partners with a new way of managing the speed, depth of penetration and delivery of active ingredients in a wide range of pharmaceutical, healthcare and consumer products.

## Forward-Looking Statements

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This announcement contains certain "forward-looking statements" concerning OBJ. Where OBJ expresses or implies an expectation or belief as to future events or results, such expectation or belief is expressed in good faith and believed to have a reasonable basis.

Forward-looking statements provided in this announcement are based on assumptions and contingencies which are subject to change without notice. Such forward-looking statements including statements regarding intentions, planned events and potential results are provided as a general guide only and should not be relied upon as an indication or guarantee of future performance.

There can be no assurance that actual outcomes will not differ materially from these forward-looking statements, and there are risks associated with OBJ and the industry which may affect the accuracy of the forward-looking statements. OBJ does not undertake any obligation to release publicly any revisions to any forward-looking statement to reflect events or circumstances after the date of this announcement or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws.

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