

PROSPECTOR[®]



MENU

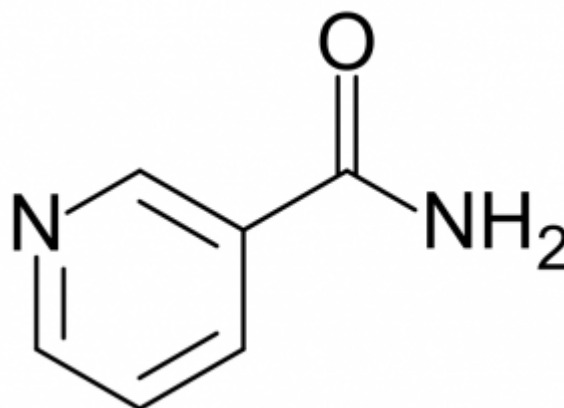
The Benefits of Niacinamide

Posted on February 7, 2014 by [George Deckner](#) — 32 comments

Share this article: [讚](#) [擲](#) [憶](#) [錄](#) [城](#)

Niacinamide is a multifunctional active whose efficacy has been substantiated in numerous peer-reviewed journals. This biologically active form of niacin (**vitamin B3**) is found widely in many plants and animals.

It is also an important precursor to the co-factors NADH (Nicotinamide Adenine Dinucleotide) and NADPH (Nicotinamide Adenine Dinucleotide Phosphate). Along with their reduced forms NADH and NADPH, they act as coenzymes in more than 40 biochemical reactions and can also act as antioxidants.



Niacinamide is a water soluble material that is solution and light stable. The optimum solution stability is at a PH 6. It can hydrolyze and form nicotinic acid at higher or lower PH, which can result in skin irritation.

Benefits

Improved Skin Barrier Function

- Topical Niacinamide increases free fatty acid ceramide levels in the skin, stimulates micro-circulation in the dermis, and prevents the skin from losing water. It also increases protein synthesis (e.g. keratin), raises intracellular NADP levels, and speeds up the differentiation of keratinocytes.

Anti-Aging

- 5% Topical Niacinamide reduces wrinkling, red blotchiness, yellowing and hyper pigmented spots in aging facial skin.
- Synergy with Kinetin is claimed.
- Senetek claims that a combination of Kinetin and niacinamide may reduce facial wrinkles in Asian women by nearly 50%.

Moisturization

- In a small study, 2% topical Niacinamide shown to be more effective than Vaseline (petrolatum) for reducing skin water loss and increasing hydration.

Reduced Skin Oiliness

- 2% Niacinamide topically applied may be effective in reducing sebum production. Synergy with Sodium Dehydroacetic acid is claimed.

Reduced Skin Pore Size

- Synergy with Sodium Dehydroacetic acid is claimed.

Improved Rosacea

Reduced Hyperkeratosis

Acne

- 4% Nicotinamide gel is comparable in efficacy to 1% clindamycin gel (leading topical prescription for treating acne) in the treatment of acne vulgaris.

Skin Lightening

- Niacinamide is believed to influence cutaneous pigmentation by down-regulating transfer of Melanosomes from Melanocytes to the Keratinocytes without inhibiting tyrosinase activity or cell proliferation, and it may also interfere with the cell-signaling pathway between Keratinocytes and Melanocytes to decrease melanogenesis.
- Topical 2 to 5% Niacinamide has shown some efficacy when used alone or in combination with N-Acetyl Glucosamine for the treatment of melasma and UV-induced hyperpigmentation in fair-skinned patients and Asians. Synergy with N Acetyl Glucosamine is claimed.
- Niacinamide with Retinyl Palmitate has been shown to improve hyperpigmentation and increase skin lightening after 4 weeks of treatment compared with vehicle alone.

References

1. Niren. NM Pharmacologic doses of Nicotinamide In the treatment of Inflammatory skin conditions: a review. *Cutis* (Jan. 2006), 77(1 Suppl):11-6.
2. Shalita AR, Smith JG, Parish LC, Sofman MS, Chalker DK. Topical Nicotinamide compared with clindamycin gel in the treatment of inflammatory acne vulgaris. *Int. J. Dermato.*34 (6): 434-7.

3. Hakozaiki T, Mlnwalla L Zhuang J et al. The effect of Niacinamide on reducing cutaneous pigmentation and suppression of melanosome transfer. Br. J Dermatol. (July 2002), 147 (1): 20-31.
4. Gehring W. Nicotinic acid/Niacinamide and the skin. Journal of Cosmetic Dermatology (2004) 3 (2), 88–93.
5. Shalita AR, Smith JG, Parish LC, Sofman MS, Chalker DK., Department of Dermatology, State University of New York, College of Medicine, Brooklyn, USA.
6. Navarrete-Solís J, Castanedo-Cázares JP, Torres-Álvarez B, Oros-Ovalle C, Fuentes-Ahumada C, González FJ, Martínez-Ramírez JD, Moncada B. A Double-Blind, Randomized Clinical Trial of Niacinamide 4% versus Hydroquinone 4% in the Treatment of Melasma. Dermatol Res Pract. 2011:379173.
7. Soma Y, Kashima M, Imaizumi A, Takahama H, Kawakami T, Mizoguchi M. Moisturizing effects of topical Nicotinamide on atopic dry skin. Int. J. Dermato., March 2005, 197-202.
8. Bissett, D. L.; Miyamoto, K.; Sun, P.; Li, J.; Berge, C. A. Topical Niacinamide reduces yellowing, wrinkling, red blotchiness, and hyper pigmented spots in aging facial skin. Int. J. Cosmet. Sci., Vol. 26, Number 5, Oct. 2004, 231-238.
9. US 5980921 Topical compositions for regulating the oily/shiny appearance of skin (Procter and Gamble-11/9/99).
10. EP 0896522B1 Methods of regulating skin appearance with vitamin B3 compound (Procter and Gamble-4/23/97).
11. Draelos ZD, Ertel K, Berge C. Niacinamide-containing facial moisturizer improves skin barrier and benefits subjects with rosacea. Cutis. 2005 Aug; 76(2):135-41.
12. Chiu PC, Chan CC, Lin HM, Chiu HC, The clinical anti-aging effects of topical Kinetin and Niacinamide in Asians: a randomized, double-blind, placebo-controlled, split-face comparative trial. J. Cosmet. Dermatol. 2007 Dec; 6(4):243-9.

The views, opinions and technical analyses presented here are those of the author or advertiser, and are not necessarily those of UL's Prospector.com or UL LLC. All content is subject to copyright and may not be reproduced without prior authorization from UL or the advertiser. While the editors of this site may verify the accuracy of its content from time to time, we assume no responsibility for errors made by the author, editorial staff or any other contributor.

Share this article: [鑽](#) [擲](#) [孃](#) [錄](#) [城](#)

Filed Under: [Personal Care & Cosmetics](#)



About George Deckner

George Deckner brings over 40 years of experience as a formulating chemist to his role as a personal care and cosmetics industry expert at Prospector. His rich professional background in innovative product development, research, material science and exploratory formulation, as well as a passion for developing products that make people's lives more comfortable and happy, inform the articles he

writes for Knowledge.ULProspector.com.

[LEARN MORE ABOUT GEORGE](#)

32 Responses to “The Benefits of Niacinamide”

Shawn says:

[February 12, 2014 at 7:58 pm](#)

Hello George,

Thanks for the highly articulate information.

We're a Co-Packer, and one of our clients is asking us to use 15% Niacinamide (USP Grade). For their Skin Care Line: Moisturizers etc.

*Niacinamide is the only active ingredient.

We need some advice on the use of such high percentage. Please oblige us by doing the needful.

Best Regards,
Shawn

2/12/2014

[Direct Reply](#)

Beth Politsch says:

[February 14, 2014 at 10:35 am](#)

Shawn,

I wouldn't use more than 1-5% in a formulation. You will probably have problems with irritation, skin feel, and cost.

Sometimes more is not necessarily better.

George Deckner

[Direct Reply](#)

Dr. Hal Simeroth says:

[February 26, 2014 at 2:26 pm](#)

I have concerns about the use of Niacinamide due to the tight pH control required to avoid the creation of nicotinic acid. In a formulation with multiple actives this is a challenge on a batch to batch basis. What about phospholipid encapsulated Niacinamide? It would seem that this would mitigate the pH issue.

[Direct Reply](#)

Beth Politsch says:

[February 27, 2014 at 11:18 am](#)

Given all of the potential benefits of Niacinamide, I don't consider a PH restriction of around 6 to be a serious issue given the numerous different types of actives that are available to the formulator. I would use hydrogenated lecithin as a penetration aid, no need for encapsulation.

George Deckner

[Direct Reply](#)

Fernanda Perea says:

[July 22, 2014 at 2:30 pm](#)

Dear George,

Thank you so much for this article, so useful.

I have a doubt with Niacinamide use: This article is only about skin, is there any study or evidence about the benefit on Hair? A lot of Shampoo brands claim to have niacinamide.

Thank you so much.

Best Regards.
Fernanda Perea

[Direct Reply](#)

Whitney Black says:

[July 28, 2014 at 6:30 pm](#)

Maria,

There is no evidence that Niacinamide is useful in rinse off products due to poor deposition.

George

[Direct Reply](#)

Madeleine says:

[October 22, 2014 at 6:09 am](#)

An excellent synthesis of information regarding the cosmetic benefits of niacinamide. One question: I've read that niacinamide inhibits sirtuins. Would this then mitigate niacinamide's anti aging benefits when topically applied?

[Direct Reply](#)

Eric says:

[June 12, 2017 at 12:25 pm](#)

A very good question, Madeleine. I have consulted with two researchers doing work on SIRT pathway enhancement using niacinamide (NAM) and it's derivatives. Because NAM is both a reactant and a product of the NAD+ pathway and subsequent sirtuin production, an overabundance of NAM would logically reduce sirtuin production (via Le Chatelier's Principle). This is why most experts on biogerontology are now promoting use of niacinamide riboside supplementation rather than simple niacinamide. Unfortunately, NR is very expensive and I have not seen any data on its use as a topical remediation. You can see how NR and NAM affect NAD+ production here:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4487780/figure/F1/>

[Direct Reply](#)

Assaf Zeira says:

[June 30, 2017 at 4:09 am](#)

This is correct. NAM would in fact reduce Sirtuin production. As for nicotinamide riboside, its prices are reducing. In fact my company Longevitics is offering a product containing nicotinamide riboside (NR) and also nicotinamide mononucleotide (NMN). Both NR and NMN are known as effective precursors of NAD+ and as catalysts of Sirtuins.

[Direct Reply](#)

Ankita Vichare says:

[March 31, 2015 at 11:08 am](#)

Hi,

Thank you for the article on Niacinamide.

I am formulating a clear gel using Niacinamide at 4%. I am trying to incorporate Fragrance in my formula as well. But as soon as I add the fragrance, it turns hazy. Is there any suggestion to keep the product clear?

Thanks.

[Direct Reply](#)

Suzana says:

[June 11, 2018 at 2:33 pm](#)

Hi Dr. Deckner,

Is there any known benefits to keeping the pH below 6 so that it forms nicotinic acid ? I am working on a pH balancing product that has a pH of 3.30- 3.70, the formula also contains phenol,lactic acid, and salicylic acid.

[Direct Reply](#)

Suzana Margilaj says:

[October 23, 2018 at 9:05 am](#)

Would I be able to create a pH balancing/exfoliating toner with just niacinamide, salicylic and lactic?

[Direct Reply](#)

George Deckner says:

[October 24, 2018 at 6:40 am](#)

Niacinamide will react with acids at low PH. Also Niacinamide stability isn't as good at low PH.

[Direct Reply](#)

Julie says:

[June 14, 2018 at 10:59 pm](#)

If a consumer is using Retin a is NAM overkill?

[Direct Reply](#)

George Deckner says:

[June 15, 2018 at 10:27 am](#)

Julie,

No, Niacinamide helps reduce retinoid induced skin irritation.

George.

[Direct Reply](#)

Karishma Ramathar says:

[April 2, 2019 at 5:58 pm](#)

Can I use glycerin to mix Niacinamide with?

[Direct Reply](#)

George Deckner says:

[April 3, 2019 at 11:18 am](#)

You don't need to do this. Niacinamide is very water soluble

[Direct Reply](#)

temmythom says:

[December 10, 2020 at 10:29 am](#)

Hello Everyone,

Can i use N-acetyl glucosamine together with Niacinamide since the pH of N-acetyl glucosamine is between 3.5-5 and Niacinamide is 6????

Thanks and remain bless. While I await your favourable response.

[Direct Reply](#)

George Deckner says:

[December 10, 2020 at 11:22 am](#)

Good day.

Yes, they work well together at a PH OF 5-6.

Thanks for reading,
George

[Direct Reply](#)

Raj says:

[December 12, 2020 at 5:59 am](#)

Hi, can I combine vitamin c with niacinamide. If yes what should be ph range ?

[Direct Reply](#)

George Deckner says:

[December 21, 2020 at 3:39 pm](#)

Hi, Raj:

Yes, however you need to use a stable vitamin C derivative like Ethyl Ascorbic acid or Ascorbyl Glucoside formulated at a PH of around 5.

Thank you for reading!

George

[Direct Reply](#)

Melissa says:

[February 1, 2021 at 2:04 am](#)

Hello George,

I have a question regarding Niacinamide and Vitamin C. If I use a formulation (serum, cream) with Niacinamide 5-10% and apply it on the skin, can I use another Ascorbic Acid Serum 10-15% on top? What can happen if I use them together? Is this an issue? Does the formulation matter?

Thank you,

Melissa

[Direct Reply](#)

George Deckner says:

[February 2, 2021 at 4:34 pm](#)

Dear Melissa:

Niacinamide reacts with Ascorbic acid. Its not clear to me whether this has any impact on the efficacy of Niacinamide or Ascorbic acid.

Thanks for reading,

George

[Direct Reply](#)

Melissa says:

[February 5, 2021 at 7:24 am](#)

Hello George,

What will happen when they are used together? Have you ever tried this? And if so, what are the main issues? I do not fully understand this.

And what if the solutions are water-free, does this matter?

Thank you,

Melissa

George Deckner says:

[February 5, 2021 at 9:22 am](#)

Dear Melissa:

The combination is not water stable.

Thanks for reading!

George

Chris says:

[December 23, 2020 at 1:47 pm](#)

Hello,

Why are some over the counter Niacinamide formulations “Hazy” and others don’t? What is causing it? And is it an issue?

Thanks,

Chris

[Direct Reply](#)

George Deckner says:

[January 4, 2021 at 2:53 pm](#)

Hi, Chris:

Niacinamide is highly water soluble. The haziness is not due to Niacinamide if the formulation is water based.

Thanks for reading!

George

[Direct Reply](#)

hyoseopkim says:

[January 5, 2021 at 7:08 am](#)

A paper titled Rate Studies on the Hydrolysis of Niacinamide states that hydrolysis does not occur between pH 4.5 and 6.0.

It's stable in weak acid. What do you think?

[Direct Reply](#)

George Deckner says:

[January 5, 2021 at 2:08 pm](#)

Good day.

I have read the paper and am skeptical. I would confirm this by checking the stability of Niacinamide in your formulation and measuring Nicotinic acid formation. It takes very little Nicotinic acid to cause skin irritation.

Thanks for reading,

George

[Direct Reply](#)

hyoseopkim says:

[January 5, 2021 at 6:30 pm](#)

Thanks for the good answer. Thank you very much.

[Direct Reply](#)

hyoseopkim says:

[January 5, 2021 at 6:33 pm](#)

Can you recommend any papers on pH affecting nicotinamide?

[Direct Reply](#)

George Deckner says:

[January 13, 2021 at 10:32 am](#)

Good day!

Here's a publication that you might find interesting: Rate Studies on the Hydrolysis of Niacinamide, Per Finholt and Takeru Higuchi, Journal of Pharmaceutical Sciences, Vol. 41, No.7, July 1962.

Thanks for reading!

George

[Direct Reply](#)

Leave a Reply or Comment

Your email address will not be published. Required fields are marked *

Comment

Name *

Email *

Website

FOLLOW PROSPECTOR

鑽

嬭

鐳

RELATED ARTICLES

More "Personal Care & Cosmetics" articles:

[Formulating Natural, Organic or Clean for Industry Certifications](#)

[Getting started with a starting formulation](#)

[How to Formulate Vegan, Halal and Palm-Free Cosmetic Products](#)

[About Prospector](#)

[Company Information](#)

[Contact Us](#)

[Chinese Knowledge Center](#)

[Company News](#)

[Call for Knowledge Center Contributors](#)

[Industry Search Engines](#)

[Adhesives & Sealants](#)

[Food, Beverage & Nutrition](#)

[Graphic Arts & Inks](#)

[Household, Industrial & Institutional Cleaners](#)

Lubricant & Metalworking Fluids

Paint & Coatings

Personal Care & Cosmetics

Solid Materials

Prospector

7930 Santa Fe, 3rd Floor
Overland Park, KS 66204 USA

Phone: 913-307-9010

Fax: 913-307-9011

Copyright © 2021 Prospector Knowledge Center | [Online Policies](#) | [Site Map](#)