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Ashland to show skin defense effects of GP4G SP biofunctional at Personal Care and Homecare Ingredients Exhibition in Shanghai

In vitro studies show aquatic plankton rich in GP4G nucleotides dampens the effect of infrared radiation, ultraviolet radiation and thermal shocks on the appearance of skin

BRIDGEWATER, N.J. - Ashland Inc. (NYSE: ASH) today announced it will present new data at the Personal Care and Homecare Ingredients Exhibition (PCHi) in Shanghai this week that demonstrates how plankton extract rich in GP4G nucleotides limits the appearance of skin damage *ex vivo* following exposure to environmental shocks, such as infrared radiation, ultraviolet radiation, heat and cold. Research conducted at the Vincience™ Global Skin Research Laboratory centered on strategies to defend human skin with a topical application of guanine rich nucleotides extracted from *Artemia salina*, a type of plankton proven to withstand extreme environmental conditions over millions of years.

Clinical results show [GP4G SP biofunctional](#), the same basic compound protecting *Artemia salina* plankton from extinction during severe environmental conditions, may be used in formulations to better manage the appearance of skin following exposure to solar and thermal shocks.

"Protecting skin from the environmental shocks of infrared and UV radiation, as well as extreme heat and cold may be the most efficient way to defend against the look of premature skin aging," said Neil Astles, global marketing manager, [skin care](#) biofunctionals, Ashland Specialty Ingredients. "New clinical research on GP4G SP biofunctional, an offering commercially available from Vincience since 1994, demonstrates how a novel nucleotide found in nature, a building block of DNA and RNA, may be used in various capacities to help preserve skin appearance *ex vivo* in the presence of otherwise harmful environmental shocks."

Investigating GP4G for beneficial outcomes

Absorbing various environmental shocks, the nucleotides of *Artemia salina* plankton support its survival during extreme conditions. The nucleotides are believed to be a source of free energy during prolonged anoxia (absence of oxygen), a biochemical lifeline that allows for its survival during a resting stage. Working on a variety of functional levels - molecular, cellular and physiological - the nucleotides of *Artemia salina* plankton are believed to have helped the species adopt and survive environmental shocks for millions of years.

Absorbing IR shock

Taking a cue from nature, the Vincience research team investigated potential associations between GP4G nucleotides and a reduction in indicators of human skin damage from infrared radiation.

Specifically, infrared radiation A (IR-A) is known to deeply penetrate human skin and may cause damage to the mitochondria (power plant of living cells). Our experiment confirmed that when exposed to a certain dose of IR-A, human keratinocytes showed marked increases in reactive oxygen species (ROS) production *in vitro*. ROS are associated with significant damage to the appearance and vitality of skin. Coating human keratinocytes with just 1percent GP4G SP biofunctional was associated with a limited increase in production of ROS *in vitro* for cells exposed to the same level of IR-A.

Defending against cold shock

Knowing that thermal shock plays a role in the appearance of premature skin aging, the Vincience research team investigated the potential of GP4G nucleotides to defend against exposure to cold. Previous research has shown that cold inducible RNA binding proteins (CIRBP) up-regulate in human skin cells (human keratinocytes) following sudden exposure to cold temperatures.

After applying 1 percent GP4G SP biofunctional on cells (human keratinocytes) twice a day for 48 hours following exposure to cold shock (for six hours), limited modulation of cold inducible RNA binding proteins was measured *in vitro*. These experimental test results suggest that human skin cells may be protected from cold stress *in vitro* when GP4G SP biofunctional is present.

Visit Ashland at PCHi China exhibition

Scientists and formulators of anti-aging and skin care products are invited to visit Ashland (China) Holdings Co., Ltd. at stand K06 during the PCHi exhibition Feb. 19-21 to review the data showing the shock-resisting capability of GP4G SP biofunctional in the areas of extreme cold and heat, UV and IR-induced stress. Samples of skin and eye cream containing GP4G SP biofunctional will also be available. For more information, please visit ashland.com/personalcare

About Ashland Specialty Ingredients

Ashland Specialty Ingredients, a commercial unit of Ashland Inc., offers industry-leading products, technologies and resources for solving formulation and product performance challenges in key markets including personal care, pharmaceutical, food and beverage, coatings and energy. Using natural, synthetic and semi-synthetic polymers derived from plant and seed extract, cellulose ethers and vinyl pyrrolidones, Ashland Specialty Ingredients offers comprehensive and innovative solutions for today's demanding consumer and industrial applications.

About Ashland

In more than 100 countries, the people of Ashland Inc. (NYSE: ASH) provide the specialty chemicals, technologies and insights to help customers create new and improved products for today and sustainable solutions for tomorrow. Our chemistry is at work every day in a wide variety of markets and applications, including architectural coatings, automotive, construction, energy, food and beverage, personal care, pharmaceutical, tissue and towel, and water treatment. Visit ashland.com to see the innovations we offer through our four commercial units - Ashland Specialty Ingredients, Ashland Water Technologies, Ashland Performance Materials and Ashland Consumer Markets.

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