News Release

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Ashland demonstrates the abilities of anti-pollution skin care technology in double-blind clinical study

Bridgewater, NJ – A growing global trend toward urban lifestyles and city living is leading to an increasing concern about the effects of atmospheric pollution on skin. Pollutants may adhere to the skin and the particulate matter may penetrate to induce skin sensitivity and accelerate the visible signs of skin aging with collagen breakdown, skin discoloration, and skin barrier compromise. Results from a recent double-blind clinical study, conducted by Ashland's Consumer Science team in Shanghai, indicate Elixiance™ biofunctional, rich in polyphenols quercitrin and miquelianin, can provide skin protection benefits following 70 days of exposure in an urban environment with high levels of air-pollution.

"Ashland chose Shanghai, China, as the location to conduct a double-blind clinical study," said Anne-Francoise Clay, marketing manager, skin care biofunctionals, Ashland. "The purpose of the study was to evaluate the qualifications of Elixiance in an urban environment known to have relatively high levels of fine particulate matter (less than 2.5 µm, known as PM2.5) at certain times of the year." (Table 1.)

Table 1. Air Quality Index (AQI) in Shanghai

Age Group	Application Time	PM2.5	O_3	AQI
18-35	August 25 to November 6	62	76	84
35-65	November 9 to January 8	98	29	105

Evaluating the skin complexion of Elixiance at 1 percent active level on the faces of all 59 volunteers, who ranged in age from 18 to 65 and live in Shanghai, Ashland researchers found, in comparison to a placebo application, an extremely significant (74 percent) increase in luminosity L* value after 28 days, and a highly significant (49 percent) increase in ITA° value. These values indicate an increase in skin luminosity and skin clarity, respectively.

Skin sensitivity is another concern often raised by experts and consumers regarding prolonged PM2.5 exposure.

"As part of this double-blind clinical study, Ashland tested some volunteers for signs of recovery from skin sensitivity. A lower level of a* value and Interleukin-1 alpha (IL-1 α) is associated with less sensitivity of the skin. Elixiance at 1 percent was associated with an observed decrease in both the a* value in 40 volunteers and IL-1 α in the *stratum corneum* of a subgroup of 8 volunteers, as compared to the placebo side," Clay said.

Support for PM2.5 anti-pollution claims
As consumers look for advanced personal care formulations to protect themselves from the impacts of atmospheric pollution, they may select products that offer specific claims, such as anti-PM2.5 effects. Ashland's Elixiance biofunctional, a natural and sustainable extract of the Peruvian pink pepper tree, is an ingredient, as demonstrated by recent *in vitro* and *in vivo* studies, to help protect skin from the negative effects of atmospheric pollution.

"In Asia, where the anti-pollution skin care market is well established, formulators can utilize the results of these studies regarding Elixiance to help support anti-PM2.5 claims. In the rest of the world, formulators now have the option to create truly unique skin care products that include the benefits of anti-pollution," Clay said.

Avant Institute to address the challenges and solutions of anti-pollution skin care
On Thursday, September 8th, established academicians and research scientists in environmental exposure, dermatology, and biofunctional ingredients will convene at the Avant Institute Symposium in New York City to discuss the challenges and strategies under consideration to protect skin from pollution stress. Skin care R&D experts may register to attend the symposium, titled *Urban Beauty: When Environment and Skin Meet*, at http://www.ashland.com/pages/avant-institute.

For more information, visit Ashland on the web at Ashland.com/personalcare, or write to personalcare@ashland.com.

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