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CORRESPONDENCE

Breast Cancer Patients Unknowingly Dosing Themselves With Estrogen by Using Topical Moisturizers

TO THE EDITOR: A 46-year-old woman with estrogen receptor–positive breast cancer presented to us with impressive "youth enhancing results" after 4 weeks of daily application of a commercially available skin moisturizer after bathing.

We were concerned about the possible presence of estrogenically active substances in the cream, despite the absence of any mention in the ingredient list. A sample similar to the patient's cream along with samples of other commercially available moisturizers that were obtained from department stores and pharmacies were sent for measurement of estradiol, estrone, and estriol.

Products were selected based on their claims of "rejuvenating" or "youth enchancing" capabilities. The price for the moisturizers ranged from a high of several hundred dollars to a low of 10 dollars per unit. None of the ingredient lists contained any mention of an estrogen or estrogenic molecules. Unopened samples were mailed to Analytic Research Laboratories (Oklahoma City, OK). Each of the 16 products was tested for estradiol, estriol, and estrone.

High performance liquid chromatography analysis equipped with ultraviolet detection was used to provide component analysis.

Four samples contained more than 0.40% estriol, one contained 0.17% estriol, and one contained 0.05% estrone. A summary of the results are presented in Table 1.

Table 1. Face Creams

Sample	Estradiol, Estriol, or Estrone Contents	Particular Estrogen (%)
A	Yes	Estrone 0.05%
B	Yes	Estriol 0.50%
C	No	None
D	No	None
E	No	None
F	Yes	Estriol 0.17%
G	Yes	Estriol 0.61%
H	No	None
I	No	None
J	No	None
K	No	None
L	Yes	Estriol 0.44%
M	No	None
N	No	None
O	Yes	Estriol 0.47%
P	No	None

This testing was only a screening process. Levels of estadiol, estrone, and estriol were documented only above 0.05%. For reference, Estrace vaginal cream produced by Warner Chilcott is 0.01% estradiol. Testing was done only for the three estrogens noted. No designer estrogens, estrogen-like molecules, or progesterones were evaluated. These samples were obtained in April 2007, and since cosmetic companies frequently change their formulations, contents of each product may not currently be similar to those obtained at that time. It is our belief that the release of the brand names may be misleading.

Cosmetic laws are based on an outdated concept that an intact skin is a barrier to topically applied substances. Manufacturers of cosmetics (including moisturizers) are relied on to ensure the safety of their products and to provide accurate ingredient labels. No government agency (ie, the US Food and Drug Administration) tests these products unless a problem is reported.

Daily application of topical "youth enhancing" moisturizers containing estrogen or estrognically active compounds could theoretically be a risk to women with breast cancer, particularly those with estrogen receptor–positive breast cancers who take aromatase inhibitors.

Komori et al[1] described a 93-year-old patient with a history of extensive topical use of an estradiol-containing cream. She presented with a hyperplastic uterus as large as an adult menstruating female, and also with invasive breast cancer. Kendall et al[2] documented short-term elevation of systemic estradiol levels in patients using estradiol vaginal tablets while on aromatase inhibitors. They advised caution when using these products concurrently. The extent to which chemicals applied to the skin are absorbed is unknown. Darbre[3] notes personal care products are left on the skin, allowing for absorption through the dermis, with the net result of a chemical deposition in underlying local tissues. Donovan et al[4] documented multiple cases of clinical effects from topically absorbed hormone products. Harvey and Everett[5] emphasized that human exposure to increasingly sophisticated cosmetic formulations is largely regulated by the manufacturers. Reviewing Chadwick et al,[6] Cheibowski et al,[7] Harvey et al,[8] and Mai et al[9] may provide helpful background information, raise related questions, and suggest additional complementary avenues of research.

We believe that women, especially patients with a history of breast cancer, should be able to understand the potential risks when exposed to estrogenically active molecules in commercially available topical moisturizers. Because our testing methodology was only intended as a screening process, we strongly encourage the scientific community and the US Food and Drug Administration to repeat and expand on the results of these screening tests.

Adrienne C. Olson
Rancho Palos Verdes, CA

John S. Link and James R. Waisman
Breastlink Medical Group, Torrance, CA

Thomas C. Kupiec
Analytical Research Laboratories, Oklahoma City, OK

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

The author(s) indicated no potential conflicts of interest.

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