

Cosmetics and Cancer

Origin of the myth

Websites, emails and brochures, especially from companies selling organic skincare and cosmetics, frequently warn against the chemicals used in 'mainstream' products. Harmful substances, such as lead or mercury, have been banned from use in cosmetics. Other claims made by these sources often cannot be backed up by scientific studies.

Current evidence

Parabens

Parabens are used in cosmetics and personal care products to preserve them and protect them against growth of micro-organisms.¹

Parabens can act similarly to the female hormone oestrogen, which has been a source of concern regarding use of these substances. However, a study published in 1998 found that the most potent paraben had 10,000 times less activity than naturally occurring oestrogen.²

The Cosmetic Ingredient Review (CIR) is a US-based organisation which assesses the safety of ingredients used in cosmetics and publishes the results in the International Journal of Toxicology. CIR reviewed the safety of parabens in 1984 and again in 2008 and 2012 and concluded that they were safe for use in cosmetics.³

Alpha Hydroxy Acid

Alpha Hydroxy Acid (AHA) is derived from fruit and milk sugars, and claims to improve sun damaged skin and reduce wrinkles and age spots. AHA is also known under the following names: glycolic acid, lactic acid, citric acid, α -hydroxyoctanoic acid, and α -hydroxydecanoic acid.⁴

The Food and Drug Administration (FDA), a US agency, assessed the safety of AHA and sponsored two studies on the chemical. The studies showed an association between AHA use and an increase in both the number of sunburn cells on the skin and UV induced redness. Studies by the cosmetics industry show that AHA increases skin sensitivity to UV radiation. The sensitivity is reversible and skin regains its original sensitivity approximately a week after use of AHA is stopped. FDA advises to reduce sun exposure and to not exceed recommended applications when using products that contain AHA.⁴

A study on the effects of AHA directly on skin cancer did not establish any conclusive link. The effects of long-term use of AHAs have not been thoroughly investigated.

Phthalates

Phthalates are often used in nail polishes, hairsprays, and in fragranced products (often under the name 'fragrance'). For myths and facts about the carcinogenicity and health effects of phthalates, see the *Plastics used for food storage and cancer* information sheet.

Summary

There is no evidence to suggest that cosmetics, when used as intended, increase cancer risk. The chemicals in cosmetics are the subject of considerable scrutiny from regulatory bodies throughout the world. Additional sun protection should be taken when using products containing Alpha Hydroxy Acids. Otherwise, there is always the option of going *au naturale*.

Further reading

- Choosing and using sunscreen
Cancer Council WA
<http://www.cancerwa.asn.au/resources/publications/prevention/#sun>
- How to be SunSmart
Cancer Council WA
<http://www.cancerwa.asn.au/resources/publications/prevention/#sun>
- Plastics used for food storage and cancer
The Cancer Council WA
<http://www.cancerwa.asn.au/resources/cancermyths/plastics-food-storage-myth/>

References

1. National Industrial Chemicals Notification and Assessment Scheme (NICNAS). [Chemicals Commonly Used in Cosmetics. May 2013 \[cited 10/07/2015\]. Available from: http://www.nicnas.gov.au/communications/publications/information-sheets/existing-chemical-info-sheets/chemicals-commonly-used-in-cosmetics-factsheet-12](http://www.nicnas.gov.au/communications/publications/information-sheets/existing-chemical-info-sheets/chemicals-commonly-used-in-cosmetics-factsheet-12). Routledge, E.J., et al., *Some alkyl hydroxy benzoate preservatives (parabens) are estrogenic*. Toxicol Appl Pharmacol, 1998. **153**(1): p. 12-9.
3. Cosmetic Ingredient Review (CIR). Parabens - New Data. 2012. Available from: http://www.cir-safety.org/sites/default/files/paraben_build.pdf
4. Center for Food Safety and Applied Nutrition (CFSAN). *Labeling for Topically Applied Cosmetic Products Containing Alpha Hydroxy Acids as Ingredients*. 2005 [cited 10/07/2015]; Available from: <http://www.fda.gov/cosmetics/guidanceregulation/GuidanceDocuments/ucm090816.htm>