



Parabens

**POLITICALLY INCORRECT,
SCIENTIFICALLY SOUND.**

Updated from a paper published in French in the Journal de Medecine Esthetique et de Chirurgie Dermatologique, September 2006¹.

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Parabens are the preservatives most commonly used in cosmetics, foods, and drugs (Elder, 1984²). These molecules are used in over 22,000 cosmetics as preservatives in concentrations up to 0.8% (mixtures of parabens) or up to 0.4% (single paraben).

that have established not only their broad spectrum of action against numerous microorganisms, but also their efficacy, stability, and their lack of side effects. Despite these studies, a controversy surrounding parabens has been mounting since 2004. As

detected traces of parabens in breast tumour tissue samples.

The media seized the subject and widely diffused the news: parabens used in cosmetics, most notably in deodorants, could cause breast cancer. As a result, numerous cosmetic companies have altered their product formulae, replacing parabens with alternate preservative systems. Parabens were the ingredient that began the trend of fear marketing in beauty products, or “free of” marketing.

The purpose of the article is to help set the record straight and to do away with fear. Indeed, the cosmetic industry regulatory agencies, both European and American, continue to support the use of parabens and have recently reiterated that there is no

Parabens have been the subject of numerous studies that have established not only their broad spectrum of action against numerous microorganisms, but also their efficacy, stability, and their lack of side effects.

The group includes Methylparaben, Ethylparaben, Propylparaben, Isopropylparaben, Butylparaben, Isobutylparaben, and Benzylparaben. They have been the subject of numerous studies

a result, the consumer is today demanding products that are paraben-free.

In the late 1990s, several studies suggested that parabens had an oestrogenic activity. Then, in 2004, English researchers

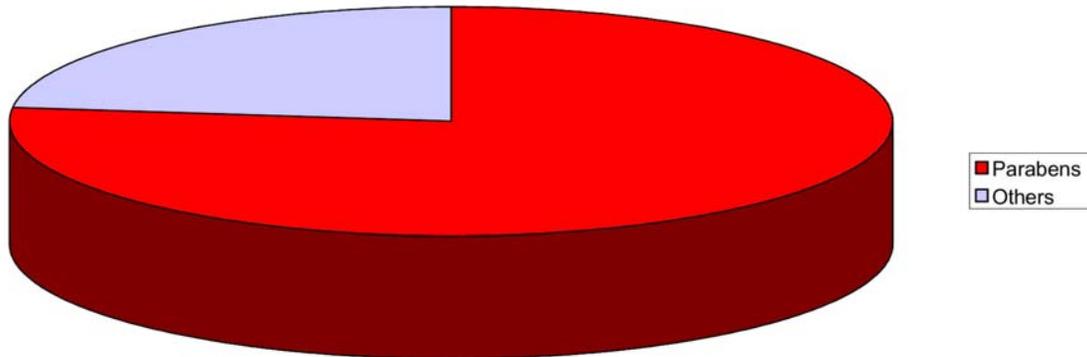
epidemiologic evidence linking parabens to breast cancer. Also, it is important to note that the body of knowledge available on parabens is greater than that on most other preservative systems. Furthermore, seventy years of safe and successful usage further

confirm the safety and efficacy profile of parabens.

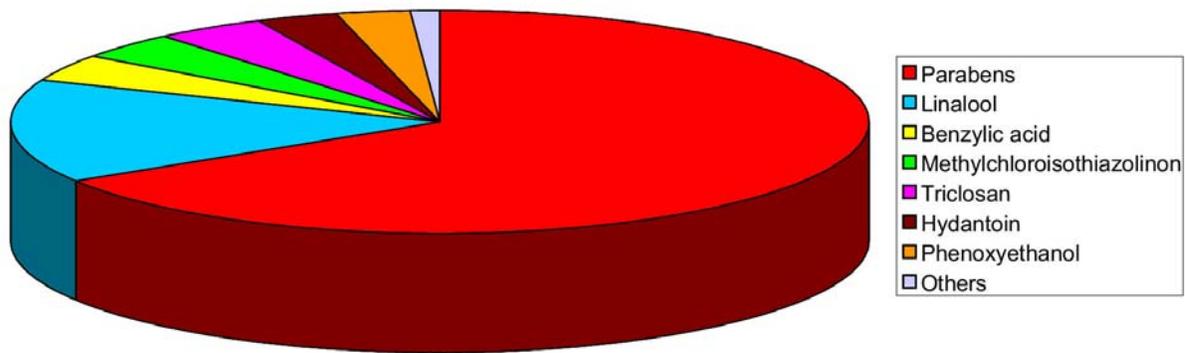
PARABENS: The Facts

Parabens, or PARAhydroxyBENZoates, are used as preservatives in cosmetics, with methyl- and propylparaben

being the most common (*Rastogi et al., 1995*³). Parabens are present in approximately 80% of cosmetics and are by far the most frequently used preservatives (Graph 1, 1995 and Graph 2, 2006; <http://membres.lycos.fr/leflacon/>⁴).



Graph 1
Distribution of preservatives in cosmetic products in 1995



Graph 2
Distribution of preservatives in cosmetic products in 2006

Numerous studies have shown that parabens present several characteristics that make them the ideal preservative, in particular in beauty products:

- They are stable and water soluble;
- They exert a broad spectrum antimicrobial effect;
- They are both bactericidal and fungicidal;
- They have a weak allergenicity and are non-irritating; and
- They have a low toxicity.

Parabens have a minimal sensitizing effect on the skin (Fisher, 1973⁵). Hannuksela *et al.* tested the allergenicity of parabens on individuals suffering from eczema over a period of three years: an allergy to parabens was detected in only 0.3% of the cases, versus a much higher incidence (3.6%) of allergies to other ingredients such as fragrances (Hannuksela *et al.*, 1976⁶).

PARABENS: THE FEARS

Routledge *et al.* 1998⁷ were the first to propose that parabens have an intrinsic oestrogenic activity and the ability to activate in-vitro oestrogen receptors. A later study indicated that parabens' oestrogenic activity is 10^1 to 10^7 times weaker than that of the main natural oestrogen, 17β -oestradiol, and increases with the size of the alkyl group; indeed, the detected activities of benzyl-, butyl-, propyl-, ethyl- and methylparabens are respectively 4,000, 8,000, 30,000, 200,000 and 3,000,000 times less important than that of 17β -oestradiol (Miller *et al.*, 2001⁸). Conclusion: the oestrogenic activity of parabens is immensely lower than that of oestrogen.

The paraben controversy that began with Routledge in the late 1990s intensified in 2004 when Darbre *et al.* found traces of parabens in 18 out of 20 breast tumour tissue samples (Darbre *et al.*, 2004⁹). In Darbre's study, parabens were extracted from breast tumour tissue samples; and individual paraben molecules were identified, quantified, and

compared to those present in a control group (obtained with the same procedures of extraction but without breast tumours).

The average value of total parabens was 20.6ng/g of tissue in the breast tumour tissue samples. However, and what most consumers fail to realize, parabens were also found in considerable concentrations in the control group. Conclusion: of parabens found both in breast

CRITICISMS OF THE FEAR

Darbre's study suffers from various flaws. First, the study is based on a small number of samples. Second, as is mentioned above, the control samples were contaminated by parabens of an unknown source; the parabens discovered in the tumour samples could thus come from an external contamination rather than from the breast tumour tissue. It therefore seems essential to

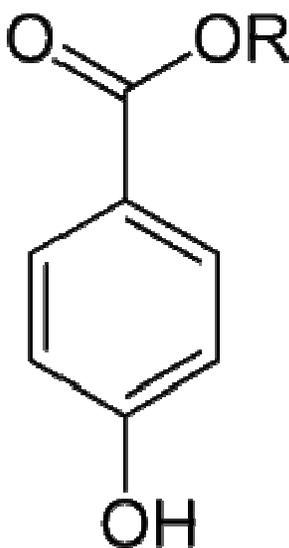
Conclusion: of parabens found both in breast cancer tissue and in the control group (non-cancerous tissue), a causal relationship between parabens and cancer cannot be established.

cancer tissue and in the control group (non cancerous tissue), a causal relationship between parabens and breast cancer cannot be established.

continue to investigate and study the link between parabens and breast tumour tissue before establishing final conclusions.

RECENT UPDATES

Today, most scientists agree that there is no proven link between parabens and breast cancer, and even less of one between the use of cosmetic products containing parabens and breast cancer. Some – including Darbre! – even recommend the preferential use of methylparaben because of its oestrogenic activity and its reduced absorption through the skin (Murrell and Vincent, 1950¹⁰; Whitworth and Jun, 1973¹¹; Darbre *et al.*, 2003¹²). Most recently, a review of parabens in the *International Journal of Toxicology* (2008) re-emphasized the safety of



parabens. It was confirmed that parabens do not accumulate in the body. Furthermore, acute toxicity studies in animals indicate that parabens are not significantly toxic by various routes of administration. The review also confirmed that parabens, even at levels that produce maternal toxicity, do not produce fetal anomalies in animal studies. The regulatory agencies have also spoken in favour of parabens. The Cosmetic Ingredient Review (CIR) Expert Panel published a report in December 2005 stating that after carefully reviewing the existing data on parabens, they

found no evidence supporting a ban (<http://www.cir-safety.org/>¹³). Similarly, the Department of Evaluation of Cosmetic Products, Biocides, and Tattoos arrived at the same conclusion and favours the continued use of methyl-, ethyl-, propyl- and butylparabens.

Finally, some industry leaders have also continued to support the use of parabens. In a recent article in *Spa Business*, Christian Courtin-Clarins¹⁴ reiterated that while Clarins' brand heritage is plants, the company is also based on scientific research and integrity, and "will continue to use synthetic

preservatives where science dictates there's no alternative." (*Spa Business Magazine*, 2009).

ALTERNATIVES TO PARABENS

The alternatives to parabens are indeed limited. More often than not, these are less effective, not well tolerated topically, and their safety has not been confirmed by adequate studies or long-term use. Thus, replacing parabens by other less well-known preservative systems could present a higher consumer risk than parabens themselves.

CONCLUSION

The controversy surrounding parabens focuses on their alleged oestrogenic activity and potential carcinogenicity, and is based on a single study published in 2004. The fear of parabens nonetheless propagated quickly, leading consumers to ask for paraben-free products and manufacturers to embrace that demand.

Today, according to the most updated research, both scientists and industry regulatory agencies continue to agree that there is no clearly established epidemiologic link between parabens and breast cancer. It is the replacement of parabens by other less-known preservative systems that could present a consumer risk.

It thus behooves industry leaders, scientists, medical doctors, and cosmetic experts to reassure consumers and to set the record straight about the safety and efficacy of parabens. 



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About the Author

Ada Polla, President & CEO of Alchimie-Forever, is the co-creator of the Swiss antioxidant skin care line Alchimie Forever. She launched this 18 SKU line and is the driving force behind the business' development and expansion. She was recently featured on the cover of *Business Week Small Biz*. Ada received her Magna cum Laude BA at Harvard University in art history and political science in 1999 and graduated in the top 5% of her MBA class at Georgetown University in 2004. She manages an international team of nine, has developed the line's brand and visibility, has established international distribution for the products, securing flagship retailers such as Fred Segal Spa in Los Angeles, Henri Bendel in New York, Sephora in France, and has driven the company's double-digit annual revenue growth. Visit Alchimie on the worldwide web: www.alchimie-forever.com.