Understanding the effects of Parabens

All personal care products that contain water, like creams, lotions and gels, need to be preserved so they don't grow harmful organisms like bacteria, yeast and mold.

As cosmetic regulatory consultant David Steinberg says, "Remember, Preservatives are Safer than Bacteria™" [1]. Without preservatives, each skin care product would have a shelf life of merely a few days.

Parabens are some of the most widely used preservatives in cosmetics and have been widely used in products to prevent microbial growth since the 1950s. They are also used as fragrance ingredients but are not listed on the label since fragrance recipes are considered trade secrets. Parabens are esters of para-hydroxybenzoic acid, from which their name is derived.

Parabens easily penetrate into the skin and bloodstream and can been detected in urine [2,3]. The European Commission on Endocrine Disruption has listed parabens as Category 1 priority substances, based on evidence that they interfere with hormone function [4].

A hormone is a chemical substance

A hormone is a chemical produced in the body that controls and regulates the activity of certain cells or organs. Hormones are essential for every activity of life, including the processes of digestion, metabolism, growth, reproduction, and mood control (MedicineNet).

Parabens mimic estrogen and concerns exist as to how this may affect certain cancers in women and hormone levels in young girls. They have been detected in human breast cancer tissues, suggesting a possible association between parabens in personal care products and cancer. The concentrations of five parabens were measured at four locations across the human breast from axilla to sternum using human breast tissue collected from 40 mastectomies for primary breast cancer in England between 2005 and 2008. One or more parabens were detected in 158/160 (99%) of the tissue samples and in 96/160 (60%) all five parabens were measured. The parabens measured were propylparaben, methylparaben, ethylparaben, butylparaben and isobutylparaben [5].

Parabens may also interfere with male reproductive functions [6]. In an in-vitro study to evaluate the androgenic activity of parabens, methylparaben, propylparaben and butyl-4-hydroxybenzoate (a paraben metabolite) inhibited testosterone-induced transcriptional activity by 40%, 33% and 19%, respectively ($P<0.05$) [7].

After dermal absorption, parabens are metabolized and excreted in urine. Paraben metabolites may also play a role in endocrine disruption as seen in experimental animals. Further studies are needed to determine human levels of parabens and metabolites. Overall, the estrogenic burden of parabens and their metabolites in blood may exceed the action of endogenous (made within the body) estrogen in childhood and the safety margin for propylparaben is very low [8].

In addition to cancer and hormonal concerns, studies indicate that methylparaben may potentiate UV-induced damage of skin keratinocytes leading to increased skin aging and DNA damage [9, 10].

The US Food and Drug Administration (FDA) and the Cosmetic Ingredient Review Expert Panel (CIR) have both deemed that parabens are safe at current exposure levels. The CIR examined parabens in 1984 and again in 2005, and concluded that parabens at the low levels found in personal care products are not a concern. However, the CIR approaches each safety assessment as if consumers are only exposed to one chemical at a time, and as if personal care products are the only source of exposure for each chemical considered. The US Environmental Working Group (EWG) believes that this is often wrong on both accounts.

The EWG as well as other organizations say that research must not just look at individual product exposure but should also evaluate the cumulative impact of multiple products used over many years. A large EWG survey showed that the average adult consumer uses nine personal care products each day containing 126 unique chemical ingredients [11].

The EWG Skin Deep Database rates products and ingredients according to their safety. A hazard score from 1-10 reflects ingredient safety:
1-2 = low hazard,
3-6 = moderate hazard &
7-10 = high hazard.

A few of the widely used parabens and their EWG hazard scores are listed below:	
Butylparaben	7
Polyparaben	7
Isobutylparaben	7
Propylparaben	7
Butylparaben	4
Methylparaben	4
Ethylparaben	4

As products containing parabens wash into the sewage system, they can be released into the environment but little is known about the accumulation of parabens in marine organisms. In a 2015 study, six parabens and four common paraben metabolites were measured in 121 tissue samples from eight species of marine mammals, including dolphins, sea otters and polar bears, collected along the coastal waters of Florida, California, Washington, and Alaska. Methylparaben was the predominant compound found in the majority of samples and 4-hydroxybenzoic acid was the predominant paraben metabolite found in all tissue samples. The metabolite also occurs naturally in plants, but the scientists say that the positive correlation between methylparaben and 4-hydroxybenzoic acid in samples suggests they come from a common synthetic source. They add that further research is needed to determine what potential health risks these substances might pose to marine animals [12].

The Goal at AlumierMD

The goal at AlumierMD is to create safe and effective formulations using unquestionably safe and effective preservative systems. In light of all the above information and studies, AlumierMD does not use parabens in their products.

References:

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