

Here is some information regarding Parabens and their use in cosmetics and foods. Our product uses less than 0.1%. If a preservative is not included in the product, when the product is opened, bacteria out of the air or from touching the bottle could enter the product and begin to grow, making the product potentially hazardous. This helps assure that the product remains safe for use even after opening and using the product. I hope the information below will answer your questions and let you know that we are vitally concerned with health and purity of ingredients.

Parabens are a group of chemicals widely used as preservatives in the cosmetic and pharmaceutical and food industries. Parabens are effective preservatives in many types of formulas. These compounds, and their salts, are used primarily for their bacteriocidal and fungicidal properties. They can be found in shampoos, commercial moisturizers, shaving gels, cleansing gels, personal lubricants, topical pharmaceuticals and toothpaste. They are also used as food additives.

Chemistry

Parabens are esters of para-hydroxybenzoic acid, from which the name is derived. Common parabens include methylparaben (E number E218), ethylparaben (E214), propylparaben (E216) and butylparaben. Less common parabens include isobutylparaben, isopropylparaben, benzylparaben and their sodium salts. The general chemical structure of a paraben is shown at top right, where R symbolizes an alkyl group such as methyl, ethyl, propyl or butyl.

Occurrence

Some parabens are found naturally in plant sources such as methylparaben from the fruit of the blueberry shrub,^{[2] [3] [4]} where it acts as an antimicrobial agent.

Toxicology

Parabens are considered to be safe because of their low toxicity profile and their long history of safe use; however, a few recent controversial studies have begun to challenge this view. Studies on the acute, subchronic, and chronic effects in rodents indicate that parabens are practically non-toxic.^{[5][6]} Parabens are rapidly absorbed, metabolized, and excreted.^[5] The major metabolites of parabens are p-hydroxybenzoic acid (pHBA), p-hydroxyhippuric acid (M1), p-hydroxybenzoyl glucuronide (M3), and p-carboxyphenyl sulfate (M4).^[7]

Breast cancer

One controversial scientific study reports that parabens were found in samples of breast tumors.^[9] The validity of the conclusions of this study have been debated in the scientific literature.^[10] Nevertheless, this study has fueled the belief that parabens in underarm deodorants or other cosmetics migrated into the breast tissue and contributed to the development of the tumors. However, no causal link with cancer has ever been proven and so far there is no scientific evidence to support any link with any form of cancer. A recent review of the available data^[11] has concluded "it is biologically implausible that parabens could increase the risk of any estrogen-mediated endpoint, including effects on the male reproductive tract or breast cancer" and that "that worst-case daily exposure to parabens would present substantially less risk relative to exposure to naturally occurring endocrine active chemicals (EACs) in the diet such as the phytoestrogen daidzein."^[12] In addition, the American Cancer Society has concluded that there is no good scientific evidence to support a claim that use of cosmetics such as antiperspirants increase an individual's risk of developing breast cancer.^[13]

Estrogenic activity

Animal experiments have shown that parabens have some estrogenic activity, acting as xenoestrogens.^[14] In an *in vivo* study, the effect of butylparaben was determined to be approximately 100,000 times weaker than estradiol, although this effect was only observed when employing a dose level which was 25,000 times higher than is actually used to preserve products.^[15] As the estrogenic effect is dose-related, it may be calculated that the estrogenic effect at normal use concentrations of butylparaben is 100,000 x 25,000, i.e. 2,500,000,000 times weaker than estradiol. In the same study it was shown that the *in vivo* estrogenic activity of parabens is reduced by about three orders of magnitude compared to *in vitro* activity probably through the rapid metabolism of the parabens to the non-estrogenic metabolites. *In vivo* data are accepted as being more relevant than *in vitro* data.

The estrogenic activity of parabens increase with the length of the alkyl group. It is believed that propylparaben is estrogenic to a certain degree as well^[16], though this is expected to be less than butylparaben by virtue of its less lipophilic nature. Since it can be concluded that the estrogenic activity of butylparaben is negligible under normal use, the same should be concluded for shorter analogs.

Some estrogens are known to drive the growth of tumors; however the estrogenic activity and mutagenic activity of estrogens are not the same with the latter dependent on free radical chemistry and not estrogen receptor activity.^[17] Nonetheless, this study has elicited some concern about the use of butylparaben, and to a lesser extent other parabens as well, in cosmetics and antiperspirants. However, there is no evidence that any cosmetics containing parabens pose a health risk, because of the low doses involved and the fact that parabens are likely to penetrate into the tissue, remain intact, and to accumulate there.^[5]

Paraben Controversy

The above mentioned studies have resulted in scientific debate that in turn led to popular controversy.^{[18] [19]} The controversy has led to some concerns (both over its carcinogenicity,^[20] as well as its estrogenic effect,^[21]) being expressed over the continued use of parabens as preservatives, although the scientific community has disproven any correlation with cancer and mostly agree that any causation is improbable.^{[22] [10] [23][24]} There is also significant scientific consensus that any estrogenic effect caused by the doses received from consumer products are insignificant compared to natural estrogens and other xenoestrogens.^[14]

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