

# Is the antioxidant butylated hydroxytoluene a depigmenting agent in man?

HOWARD I. MAIBACH, GERALD GELLIN AND MARCIA RING

University of California Medical School, San Francisco, California, U.S.A.

Because of the allegation that butylated hydroxytoluene produced depigmentation in man, a prospective study was performed. Sixteen adult darkly pigmented males received daily occlusive applications for 60 days. Depigmentation was not observed.

*Key words:* antioxidant – butylated hydroxytoluene – depigmentation – dilaurylthiodipropionate – irritation – man – skin – 4 hydroxymethyl-2,6-di-*tert*-butylphenol – 4,4'-methylenebis (2,6-di-*tert*-butylphenol).

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It has been alleged (Vollum 1971) that the antioxidant butylated hydroxytoluene (BHT) produces depigmentation in man. This was based upon inferential data observed in a patient with an adhesive tape response. The tape contained the antioxidant and several components including a corticosteroid.

Because of the widespread use of adhesive tape on human skin, we planned this experiment to determine the depigmentation proclivity of BHT.

## Materials and Methods

The test population consisted of 16 healthy adult male darkly pigmented volunteers above the age of 21. They received applications of the test compounds to the lower back. This was applied daily with a 1-inch square of non-woven fabric (Webril®) covered with occlusive adhesive tape (Blen-derm®).

The test compounds consisted of: 0.2, 0.5, 1.0 and 3.3 % BHT in a water washable cream, the cream without an antioxidant as a control and three additional antioxidants: 0.5 % dilaurylthiodipropionate; 4 hydroxymethyl-2,6-di-*tert*-butylphenol; 4,4'-methylenebis (2,6-di-*tert*-butylphenol).

Applications were made to marked sites daily for 60 consecutive days. The test compounds were applied by a technician; the investigator examined the treated sites weekly.

This was a double blind study in which samples were applied by code. Each subject received four of the test compounds. These were assigned to the individuals on a random basis; the test sites were medicated on a random basis.

## Results

There was irritation at some of the test sites and the control sites throughout. There was no evidence of depigmentation in any sub-

jects when seen at the weekly intervals throughout the study or at two 1-month intervals thereafter.

#### Comment

This data suggests that BHT and the three other antioxidants studied did not produce depigmentation when applied with occlusion in human volunteers. This is an extremely rigorous test protocol suggesting that the negative result may indicate the lack of depigmenting potential in man. Our test protocol was more rigorous than Bentley-Phillips & Boyles (1974) but produced a similar result.

We are attempting to delineate the pigmented guinea-pig model relevance to man. BHT is presently being studied in this model.

#### References

- Bentley-Phillips, B. & Boyles, M. (1974) Butylated hydroxytoluenes as a Skin Lightener. *Archives of Dermatology* 109, 216-217.
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Address:

Howard I. Maibach, M. D.  
University of California Medical School  
San Francisco, California 94143  
U.S.A.