

## CONTACT DEPIGMENTATION

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### Summary

A case of depigmentation due to self sticking bindi, spectacles and plastic watch strap authenticated by loss of pigment on patch testing is reported. The relevant literature has been reviewed.

### Introduction

Pigmentary changes are a matter of concern both for the physician and the patient alike. They pose social, cosmetic, psychological and management problems. Depigmentation is more a cause for worry in a country like India. Loss of pigment is mostly idiopathic in origin but certain chemicals like monobenzyl ether of hydroquinone and alkyl phenols have been documented to cause depigmentation<sup>1-5</sup>. Though these chemicals are used in the manufacture of polyester resins, rubber, plastic, paints and in the preparation of petroleum products, leucoderma as a result of use of these substances is quite uncommon. We hereby report a case of depigmentation due to self-sticking bindi, spectacles and plastic watch strap.

### Case report

A 55 years old woman presented with depigmentation over the forehead, back of the ears and left wrist. About 10 months earlier she had developed depigmentation over the forehead

following the use of self sticking plastic bindi for over one month. Initially there was mild itching and redness and 2-3 weeks later loss of pigment appeared at the site. About the same period patient started using spectacles and after two months of use she developed redness and burning over the back of the ears followed by leucoderma. Three months before the hospital visit patient had bought a plastic watch strap and used it almost constantly. Three days later she developed itching at the area of contact which was followed by hypopigmentation after another week.

Examination revealed depigmented areas over the forehead, retroauricular regions and left wrist (Figs. 1 & 2). The size of the lesions corresponded to the area of contact of the offending articles. There was no erythema, oedema or scaling at the time of examination. No loss of pigment was observed at any other site. Systemic examination did not reveal any abnormality.

The patient was patch tested with the articles she had used. The self sticking bindi was applied on the back and scrapings from the spectacles and watch strap were used as such for patch testing. The patches were removed after 48 hours. Positive results were

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Received for publication on 3-3-1981



Fig. 1  
Showing depigmentation over the forehead and left wrist.

obtained with all but the intensity of reaction was more with the bindi. The patient was followed up after a week and showed loss of pigment at the site of bindi application (Fig. 3). The depigmentation has been persisting for eight months, when patient was seen.

Three normal subjects were patch tested with self sticking bindi. The patches were kept for 2, 5 and 7 days in each individual. All of them were reviewed 7 days after removal of the last patch. None of them showed positive reaction or loss of pigment.

### Discussion

Oliver and his co-workers<sup>1,2</sup> were the first to report leucoderma following the wearing of rubber gloves which contained monobenzyl ether of hydroquinone (MBH) as an antioxidant. Since then a few other workers<sup>3,7</sup> have also reported depigmentation due to MBH. Becker and Spencer<sup>3</sup> in their comprehensive study applied various concentration of MBH on large number of normal Negro and white males and made the following observations.

“Clinical erythema does not always produce a white spot; in the great majority the frequency and severity of inflammation correlates directly with the degree and amount of whitening. Long lasting leucoderma is usually associated with the development of a positive patch test reaction with MBH”. Bleehen et al<sup>7</sup> in their animal experiments showed that a large number of catechols, hydroquinones, phenol compounds and mercaptomines had toxic effect on the melanocytes. Gellin et al<sup>4</sup> described four cases of depigmentation due to para-tertiary butyl catechol being used as an antioxidant agent in a Tappet assembly plant.

The mechanism of production of depigmentation due to these substances is debatable. Oliver et al<sup>2</sup> showed that most of their affected men had become allergic to MBH with positive patch tests thereby implicating contact sensitivity for loss of pigment. Becker and Spencer<sup>3</sup> hypothesized that “increase of cell permeability during inflammation allows MBH to enter the melanocyte and it leaves its mark



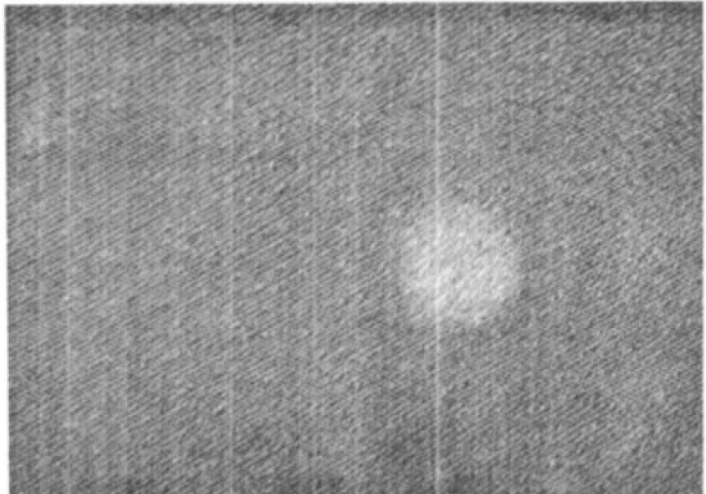
**Fig. 2**  
Showing depigmentation over the retroauricular region.

upon a metabolic template. A foreign material bearing the mark of MBH is produced which attaches itself to melanin and enters the dermis. An antibody is formed locally which inhibits the formation of melanin granules in the melanocytes". They did not believe

that contact sensitivity per se was responsible for depigmentation.

Riley<sup>8</sup> using labelled 4-hydroxyanisole (a phenolic compound) showed that it was selectively incorporated into melanocytes grown in tissue

**Fig. 3**  
Depigmentation at patch test site.



culture. It probably reacts with the tyrosinase in the melanosomes and then forms a secondary product which diffuses into the cytoplasm and kills the cell, since the effect can be reduced or even prevented by tyrosinase inhibitors.

The present case is of interest as depigmentation due to plastics and adhesives is quite uncommon and so is the development of leucoderma at the site of patch testing. It is difficult to implicate a particular chemical, as the ingredients of various offending articles are not known. The authors have come across a few more cases of depigmentation due to self sticking bindi and further investigations in these might help to answer some queries.

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