

## TO ASSESS THE DEMOGRAPHIC CHARACTERISTICS OF COLOURED AND PERFUMED HAIR OILS ASSOCIATED CONTACT DERMATITIS

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### Abstract

**Background & Method:** The aim of this study is to assess the demographic characteristics of coloured & perfumed hair oils associated contact dermatitis. The CPHOs available in the market are the mixture of different oils, where concentration of mineral oils & vegetable oils can reach up to 80% & 40% in several preparations, respectively. Other components being essential oils, herbal extracts vitamin E, camphor, menthol, preservatives, colours and anti-oxidants. Exact percentages of different CPHO ingredients are very difficult to obtain.

**Result:** We have found a decrease in incidences of CPHO associated dermatitis with age. The coconut oil, almond oil, amla oil was more commonly associated with age group below 40 years, where olive oil induced dermatitis were exclusively found in age group between 18 to 25 years.

**Conclusion:** Our daily lives of cultural beliefs influence & have the potential to introduce health hazards, & in this era of globalization, cultural practices cut across geographical boundaries. Our study provides evidence towards a possible association of application of coloured & perfumed hair oils with contact dermatitis. With large proportion of population practicing the culture of hair oil application & with changing pattern towards the use of CPHO.

**Keywords:** demographic, coloured, perfumed & hair dermatitis.

**Study Designed:** Observational Study

### Introduction

Indians have a tradition where long hairs are nurtured with the help of pure oils, if used regularly. These oils are basically mustard in the northern half & coconut in the rest of India, both nutritionally rich & loaded with medicinal & curative properties [1]. In India three types of hair oils are manufactured & marketed by small-scale industry as well as by a few units in the organized sector of the industry [2]. The type 1 contains vegetable oils or oils as base oil, & type 2 contains mineral oil as base oil, whereas type 3 contains a mixture of vegetable & mineral oil. Hair basically consists of two parts- the hair follicle & the hair shaft. The hair follicle is the centre of the biological activity like hair growth, pigment production, whereas the hair shaft is considered to be dead & is mainly made of protein. It's important to take care of both the follicle & the shaft for healthy & beautiful manageable hair. Coconut based hair oils penetrate both into the hair shaft as well as the hair follicle. In fact coconut oil is one of the very few oils that penetrate upto the medulla which is the innermost layer of the hair strand. Human beings have different hair types from silver blonde, flaming red to jet black. Physical properties of hair are also important as it imparts beauty to the hair [3]. The texture &

sensories of hair, i.e the way hair appears & feels, is dependent on the health of hair & its physical properties. Regular application of oil is known to increase the strength of hair & prevents its breakage. Coconut based hair oils also help in aligning the cuticles of hair. Aligned cuticles make hair look healthy & add to hair shine. When we comb hair we apply force to detangle hair. This often leads to hair breakage. Application of oil lubricates hair & reduces the force required to comb thereby preventing its breakage [4].

Hair behaves differently in different seasons. In summer the heat saps out vital moisture from the hair making it dry & brittle. Application of oil prevents loss of moisture & keeps hair soft & supple. In rainy season, hair tends to absorb a lot of moisture from the atmosphere due to high humidity. Hair may also get wet that leads to entry of water into the shaft.

### Material & Method

This is a prospective, observational study. The study protocol was conducted at AIMS, Dewas & Index Medical College, Indore, and M.P. Oct 2016 to Sep 2017.

The participants were recruited from outpatient facility of Department of Dermatology, Venereology & Leprosy.

The CPHOs available in the market are the mixture of different oils, where concentration of mineral oils & vegetable oils can reach up to 80% & 40% in several preparations, respectively. Other components being essential oils, herbal extracts vitamin E, camphor, menthol, preservatives, colors and anti-oxidants. Exact percentages of different CPHO ingredients are very difficult to obtain.

#### Inclusion Criteria:

Consecutive patients aged above 18 years with suspected contact dermatitis due to application of CPHO were screened; at least prior four weeks duration of suspected hair oil application was required for inclusion of subjects. Only those patients with complete recovery after stoppage of culprit hair oil, were included.

#### Exclusion Criteria:

Patients with definitive diagnosis of other specific types of dermatitis, or dermatitis arising out of massaging, or

patient having history of consumption of any immunosuppressant during last six weeks, or patients with past history of similar CPHO unrelated complaints, or pregnant or lactating female, or known immunocompromised patients, or patients having systemic disease, or psychiatric illness were excluded from the study. Participants with history of concurrent usage of other hair styling products like hair serum, hair styling gel etc were also excluded. People using multiple CPHO were also excluded. However, participants were advised to continue the hair cleansing regimen as before. For their dermatitis participants were treated with topical mid-potency corticosteroids & systemic antihistamines.

Almond oil - Mineral oil can range up to 77%, Vegetable oil, perfume, sweet almond Oil (ranging from 2% to 21.2%), vitamin E, coloring agents. Jasmine oil - Mineral oil contents close to 80% Coconut oil 20%, Fragrance containing jasmine extract.

#### Results

**Table 1: Baseline characteristics of study population**

Age group	Male	Female	Total	P Value
18-25 years	63	82	145	.005334
25-40 years	69	43	112	
40 years above	33	20	53	

The chi-square statistic is 10.4673. The *p*-value is .005334. The result is significant at  $p < .05$ .

**Table 2: Urban/Rural**

Urban/Rural				P Value
	Urban	44%	47%	.670113
	Rural	56%	53%	

The chi-square statistic is 0.1815. The *p*-value is .670113. The result is *not* significant at  $p < .05$ .

**Table 3: Literacy**

Literacy				P Value
	Literate	89%	83%	.22144
	Illiterate	11%	17%	

The chi-square statistic is 1.495. The *p*-value is .22144. The result is *not* significant at  $p < .05$ .

We have found a decrease in incidences of CPHO associated dermatitis with age. The coconut oil, almond oil, amla oil was more commonly associated with age group below 40 years, where olive oil induced dermatitis were exclusively found in age group between 18 to 25 years. Herbal & "cooling" oil & mustard oil were more commonly associated with 25 to 40 years. Whereas no specific age predilection was seen with jasmine oil. In our study, mean duration of CPHO use & application prior to

appearance of dermatitis was 15 weeks, whereas mean duration of treatment was 1 week.

#### Discussion

Mineral oils are found as major constituents in several commonly used cosmetic products, reports of mineral oil associated dermatitis are not rare in literature [5]. CPHO being mixture of several of such components, increases the potential of contact sensitization & potential of subsequent contact dermatitis. Camphor & Ultraviolet

filters like butyl methoxy dibenzoyl methane & avobenzene, & essential oils are known photosensitizers; which probably has been responsible for highest frequency of photoaggravated dermatitis in our study[6].

Hair oil use was significantly related to Seborrheic dermatitis in a study performed seborrheic dermatitis like pattern was associated with all categories of CPHO, except mustard oil. Mustard oil has been implicated in causing pityriasis rosea-like eruption; however in our study this kind of eruption was most commonly seen in jasmine oil category, followed by amla & herbal oil category, & none in mustard oil category, although herbal oils may contain mustard oil as one of the ingredients[7]. Our study results are also limited due to socio-economic status of study participants, as our tertiary care centre caters to low & middle socioeconomic classes. So dermatitis associated with high value CPHO could not be assessed, this may have been a reason behind lower incidences of olive-plus associated dermatitis[8]. Our study has suggested that CPHO associated dermatitis is more common in urban, literate male population. No significant seasonal variation could be observed with the hair oil dermatitis.

### Conclusion

Our daily lives of cultural beliefs influence & have the potential to introduce health hazards, & in this era of globalization, cultural practices cut across geographical boundaries. Our study provides an evidence towards a possible association of application of coloured & perfumed hair oils with contact dermatitis. With large proportion of population practicing the culture of hair oil application & with changing pattern towards the use of CPHO.

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