significantly increasing level of 24,25-dihydroxyvitamin D during the course of scleroderma might indicate.

REFERENCES

Melanocyte Metabolites in the Urine of People of Different Skin Colour
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The urinary excretion of 2 melanocyte metabolites was studied in normal people of different skin type. The sulphur-free indole derivative 6-hydroxy-5-methoxyindole-2-carboxylic acid was excreted in larger quantities by people with genetically dark skin, whereas the excretion of 5-S-cysteinyldopa was not related to pigment type. No correlation between 5-S-cysteinyldopa and 6-hydroxy-5-methoxyindole-2-carboxylic acid excretion emerged. Key words: 6-Hydroxy-5-methoxyindole-2-carboxylic acid; 5-S-Cysteinyldopa; Melanin; Pigment. (Received January 15, 1985.)

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Skin colour is largely dependent on the quantity and quality of the melanin in the skin. Melanin consists of heterogeneous macromolecules formed by dopa oxidation products. Oxidation products of dopa give black, insoluble pigments called eumelanin. Oxidation of dopa in the presence of cysteine gives lighter, soluble polymers called phaeomelansins.

Degradation studies of natural melamins have shown that sulphur is present in all vertebrate melamins (1). Insoluble melamins of the eye too give phaeomelanin products of degradation (2). Electron spin resonance studies on natural melamins from different sources have shown the whole range of melamins including phaeomelansins, eumelansins, and melamins of mixed type (3). The concept of mixed-type melanin with properties of both eumelansins and phaeomelansins is now widely accepted (4).
Fig. 1. The concentrations of 6-hydroxy-5-methoxyindole-2-carboxylic acid and 5-S-cysteinyldopa in the urine of people with red hair and fair skin (Group I), blond hair and fair skin (Group II), and black hair and genetically dark skin (Group III). The median is indicated by a bar.

5-S-Cysteinyldopa (5-S-CD) is supposed to be the main sulphur-containing building-stone of melanins, whereas carboxylated and decarboxylated indole derivatives are considered to be the major sulphur-free components (5). In combination with established methods for analysing 5-S-CD (6, 7, 8), a recently developed method for analysis of 6-hydroxy-5-methoxyindole-2-carboxylic acid (6H5MI-2-C) (9, 10) has made possible the study of melanocyte activity in genetically different people under normal conditions and in disease states that affect melanin synthesis. The present study is the first investigation on metabolites of both eumelanin and phaeomelanin in differently pigmented normal people.

MATERIAL AND METHODS
Twenty-nine healthy people of different skin colour took part in the study. They were divided into 3 groups according to skin and hair pigmentation: Group I, Scandinavians with red hair and fair skin (n=9); Group II, Scandinavians with blond hair but more skin pigment than Group I (n=9); Group III, Africans with black hair and genetically dark skin (n=11). Both sexes were represented in all groups, and the age distributions were similar with mean values of about 30 years. The study was performed in December-January, a period with very little sunshine in this part of Sweden. Urine was collected for 24 hours in plastic bottles containing 50 ml acetic acid and 1 g of sodium metabisulphite. Both 6HSMI-2-C and 5-S-CD were analysed within 24 h.

Analysis of the two melanocyte metabolites was performed by HPLC. 6H5MI-2-C was detected by a fluorescence detector (9, 10), and 5-S-CD by an electrochemical detector (7). 6H5MI-2-C and the two diastereomers of 5-S-CD were synthesized by earlier described methods (9, 8).

The urinary creatinine concentrations were determined at the Department of Clinical Chemistry, University Hospital, Lund.

Wilcoxon's rank sum test was used to test differences between the groups.

RESULTS
Fig. 1 shows the urinary excretion of 6H5MI-2-C and 5-S-CD.

The mean values for 5-S-CD were 36, 34, and 27 µmol/mol creatinine in Groups I, II, and III, respectively. No significant differences between the groups emerged.

The mean values for 6H5MI-2-C were 13, 17, and 50 µmol/mol creatinine in Groups I, II, and III, respectively. The interindividual variations in 6H5MI-2-C concentration were small in Groups I and II, but were greater in Group III. The urinary excretion of 6H5MI-2-C in Group III was significantly greater than that in Groups I and II (p<0.001), but there was no significant difference between Groups I and II.
No correlation was found between the indole and cysteinyldopa concentrations in individual people.

**DISCUSSION**

Redheads excrete not only cysteinyldopa but also indoles, and Africans excrete not only indoles but also cysteinyldopa. The redheads and blonds did not differ with regard to excretion patterns.

Although both the indole derivative and 5-S-cysteinyldopa were found in all pigment types studied, distinct differences in their relative concentrations were found. Most of the Africans had higher concentrations of 6H5MI-2-C than did the Scandinavians, but the cysteinyldopa concentrations did not differ significantly between the groups.

The absence of any correlation between the indole and 5-S-CD in the people studied is remarkable because it has been shown that stimulation of pigmentation by PUVA leads to increased excretion of both compounds (10). It would therefore seem that the constitutional balance between indoles and cysteinyldopas differs from the balance after stimulation of the pigment system.

It should be noted that cysteinyldopa is excreted also in the urine of certain albinos (11), and some of the cysteinyldopa determined in our subjects may have been of extramelanocytic origin. However, there is evidence that 5,6-DHI-2-C is a product exclusively formed in the melanocyte (12).

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Spun Glass Hair: Two Cases Investigated with SEM and TEM

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Two cases of spun glass hair have been investigated with SEM and TEM. The SEM studies confirm previous findings by other authors. The TEM investigations reveal a completely normal cross section appearance. These findings stress the need for investigation of the time sequence of the keratinization process of the different layers of the inner root sheath.

Key words: Spun glass hair; SEM & TEM investigations. (Received October 29, 1984.)

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Spun glass hair (synonyms: uncombable hair, pili trianguli et canaliculi) is a rare condition with apparently no manifestations from other tissues of ectodermal origin. It has not been associated with any mental deficiencies either. The afflicted subjects have very blond, almost depigmented hair (3, 4, 7, 8). The "glass wool" appearance of the hair is due to light reflexion on comparative flat segments of the hair fibre surface (Fig. 1). It has been suggested that the condition, the genetics of which is obscure, is caused by a prematurely occurring keratinization of the inner root sheath (6, 7). We here report on two young individuals which conform to previous reports in the literature.

CASE REPORTS

Case 1. A 3-year-old girl, healthy and without skin disease. Her hair has always had a striking appearance, as it has been blond, shining, and completely unmanageable. With increasing length the hair now stands as an aura around the head (Fig. 1 a). Nails and teeth are normal, as are other organs of ectodermal origin. The mental status of the patient is normal. No skin disorders are found in the family. The parent and siblings have normal hair.

Case 2. A girl, age 4. Hair eruption took place at 18 months of age. Initially apparently depigmented and kinky it began to be somewhat pigmented at the age of 3. With increasing length of the hair it has become more unmanageable and uncombable. Cutting the hair short has accentuated the problems. There are no disorders related to hair and nail or any defects in the dentition. Siblings have normal hair and there are no skin disorders in the family (Fig. 1 b).

MATERIAL AND METHODS

Small tufts of hair fibres were collected from the peripheral hair of the patients. Single hair strands were cut into 5 mm segments and mounted on SEM specimen stubs by means of double sided tape.