

5-S-CYSTEINYLDOPA IN MELANOMAS OF CAUCASIANS

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Abstract. One primary skin melanoma and melanoma metastases in 6 Caucasians of varied complexion contained 5-S-cysteinyldopa.

cysteinyldopa were performed in all cases (8). Quantitation of 5-S-cysteinyldopa was performed as recently described (9).

In 1966 Protá & Nicolaus suggested that pheomelanins were formed by a deviation from the pathway for formation of eumelanin, involving an interaction of cysteine with dopaquinone (5). Accordingly, 5-S-cysteinyldopa should be the intermediate catechol in the formation of pheomelanins. Extensive biochemical investigations support this view (6). Fluorimetric methods for the determination of thio-catechols have become available (7, 8) and recently 5-S-cysteinyldopa has been detected in a melanoma of a man with red hair (1).

The method first used for the detection of cysteinyldopa has been modified and made considerably more sensitive (9). With the new method, as little as 25 ng 5-S-cysteinyldopa may be determined in a specimen and the method is therefore suitable for analysis of a wide range of clinical materials. This paper reports the levels of 5-S-cysteinyldopa in melanoma tissue of Caucasians of varying complexion.

MATERIAL AND METHODS

A primary skin melanoma was examined from a 68-year-old woman having dark hair and no freckles. Melanoma metastases were obtained from 6 subjects who had been operated on for primary skin melanomas. The melanoma tissue consisted of surgically removed specimens in 6 cases and of necropsy specimens in 2 cases. The ages and the pigment types of the patients examined are given in Table I. Extraction and purification, and fluorimetry of catechols were performed as previously described (3). Chromatography and subsequent visualization of 5-S-

RESULTS AND COMMENTS

In the primary melanoma the amounts of 5-S-cysteinyldopa was 100 µg/g tissue. All the metastases from the 6 patients examined contained varying amounts of 5-S-cysteinyldopa (Table I). Previous studies have shown the presence of dopa in Caucasian melanomas, but the concentrations of this catechol were generally lower than those of 5-S-cysteinyldopa here observed (3, 4). In a study on the catechols of melanomas in Negroes, 5-S-cysteinyldopa was detected in 4 out of 7 patients (10).

Thus the 5-S-cysteinyldopa pathway, as indi-

Table I. 5-S-cysteinyldopa in metastases of skin melanomas

Patient	Hair colour	Freckles	Site of metastasis	cysteinyldopa (µg/g)
H. M. M 62 y	Grey	No	Skin I Skin II Brain	0.63 1.2 11
J. E. M 70 y	Grey	No	Lung	32
G. B. M 44 y	Blonde- Red	Yes	Lymph node	7.7
H. J. M 46 y	Blonde- Red	Yes	Lymph node	21
H. N. M 38 y	Blonde- Red	Yes	Lymph node	61
F. M. M 65 y	Dark	No	Lymph node	2.2

cated by the finding of this amino acid in the pigment-forming tissue, is present in both Caucasian and Negro melanomas. The method now available for detection of 5-S-cysteinyl-dopa will make it possible to analyse the role of this amino acid in the pigment metabolism of melanomas. Recent results also indicate that the urinary excretion of 5-S-cysteinyl-dopa reflects the pathologic pigment formation of melanoma patients (2).

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