Vergleichende Untersuchungen der Zelloberfläche der Pigmentzellen von Säugern mit Hilfe spezifischer Markierungstechniken

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1983

Abstract

urn:nbn:at:at-ubi:2-12519

ABSTRACT

Cell surface properties of mammalian melanocytes (M) are involved in the processes of pigment transfer to keratinocytes (K) and malignant transformation. Cellular recognition, cell contacts and cell adhesion are mediated by components of the carbohydrate surface coat, termed glycocalyx. Glycocalyx structure of human and guinea pig M was investigated with cytochemical methods in fluorescence and electron microscopy. Primary cell cultures of M, K and (human) melanoma cells (MC) were probed with a battery of 17 lectins of different specificities and cationized ferritin (CF) for the determination of oligosaccharide structure and anionic sites, respectively.

The binding patterns of both lectins and CF to M differed strikingly from those to K. In contrast to K, M reacted with Peanut Agglutinin (specific for terminal, non reducing ß-D-galactose), Soybean Agglutinin., Helix pomatia Agglutinin, Dolichos biflorus Agglutinin and Sophora japonica Agglutinin (specific for N-acetyl-D-galactosamine) only after neuraminidase pretreatment. CF invariably bound to M in a uniform monomolecular layer. K, however, displayed CF aggregates, stretches of membrane devoid of CF and a clearly time and temperature dependent redistribution of CF on the cell membrane. Neuraminidase pretreatment removed most of the CF labelon M.

In contrast to identical lectin binding patterns of M and MC, the CF binding patterns were altered with increasing malignancy. 3 out of 7 primary melanomas and 5 out of 7 metastases exhibited a disturbed CF-pattern: stretches of membrane free of CF, CF aggregates.

It is concluded that on M/MC cell surfaces terminal ß-D-galactose and N-acetyl-D-galactosamine residues are masked by sialic acid. This appears to be a universal marker of melanocytic cells. The altered distribution of anionic sites possibly reflects the abnormal behaviour and the clonal heterogeneity of MC.