

Antioxidants and Melanoma

PROFESSOR OLLE LARKÖ, MD, PhD

Department of Dermatology, Sahlgrenska Academy, University Hospital, SE-413 45 Göteborg, Sweden. E-mail: olle.larko@derm.gu.se

New research from the Sahlgrenska Academy in Gothenburg indicates that antioxidants increase the spread of malignant melanoma in mice. The researchers showed earlier that antioxidants speed up the spread of lung cancer. Cancer patients and persons with increased risk of cancer should therefore avoid food supplements with antioxidants, according to Professor Martin Bergö of Sahlgrenska Academy.

Introduction

In 2014, researchers at the Sahlgrenska Academy demonstrated that antioxidants worsened lung cancer. Mice on a diet containing antioxidants developed more numerous and more aggressive lung tumours. The results were confirmed using human lung cancer cells. It has been known for a long time that free radicals may cause cancer; hence the widespread view that antioxidants protect against cancer.

More metastases

Initial studies by Bergö's group (at the Department of Molecular and Clinical Medicine) revealed that, in mice with malignant



melanoma, antioxidants double the risk of developing metastases. The new study is published in *Science Translational Medicine* (1).

Results confirmed

The new results have been confirmed using human melanoma cells. Antioxidants may protect not only normal cells, but also tumour cells, according to Martin Bergö.

No food supplements

Bergö states that patients who have recently received a diagnosis of cancer should avoid food supplements containing antioxidants. Sunscreens containing antioxidants are also being tested.

Reference

1. Le Gal K, Ibrahim MX, Wiel C, Sayin VI, Akula MK, Karlsson C, Dalin MG, Akyürek LM, Lindahl P, Nilsson J, Bergo MO. Antioxidants can increase melanoma metastasis in mice. *Sci Transl Med* 2015 Oct 7; 7(308): 308re8. doi: 10.1126/scitranslmed.aad3740.

Licking Helps Trap Bugs in Wounds

PROFESSOR ARTUR SCHMIDTCHEN, MD, PhD

Department of Dermatology and Venereology, Lund University, SE-581 85 Lund, Sweden. E-mail: artur.schmidtchen@med.lu.se



It is well known that wounds heal remarkably well and do not get infected in the oral cavity, in spite of large amounts of various microbes. A group led by Dr. Ole Sørensen at Division of Infection Medicine, Lund University in Sweden together with colleagues from Copenhagen and Odense in Denmark have now discovered a mechanism that may explain

why we have such an effective antimicrobial defence (1). The mucus in the mouth causes the white blood cells, neutrophils, to throw out a 'net' that traps bacteria, a process also called "NETosis" (NET: neutrophil extracellular traps).

Neutrophils are essential for host defence at the oral mucosa and neutropenia or functional neutrophil defects lead to disordered oral homeostasis. The authors have shown that neutrophils from the oral mucosa harvested from morning saliva contain neutrophils with released NETs. The NETosis was

caused by binding of sialyl Lewis(X) present on saliva mucins to l-selectin on neutrophils. The saliva-induced NETs were more DNase-resistant and had higher capacity to bind and kill bacteria than NETs induced by bacteria or by stimulating agents such as phorbol-myristate acetate. Furthermore, saliva/sialyl Lewis(X) mediated signalling enhanced intracellular killing of bacteria by neutrophils. Neutrophil deficiencies are commonly associated with gingivitis, ulcerations, periodontitis, and a disturbed oral microflora. Interestingly, saliva from patients with aphthous ulcers and Behçet disease prone to oral ulcers did not induce NETosis, and therefore, the authors conclude that disordered homeostasis in the oral cavity may result in deficient saliva-mediated NETosis.

Reference

1. Mohanty T, Sjögren J, Kahn F, Abu-Humaidan AHA, Fisker N, Assing K, Mörgelin M, Bengtsson AA, Niels Borregaard, Sørensen OE. A novel mechanism for NETosis provides antimicrobial defense at the oral mucosa. *Blood* online 29 oktober, 2015.