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The Role of Manganese Superoxide Dismutase in Skin Cancer Prevention

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Abstract

Manganese Superoxide Dismutase is an enzyme involved in the cellular defense against oxidative stress. In the context of skin cancer prevention, MnSOD plays a crucial role in protecting skin cells from oxidative damage induced by reactive oxygen species. Excessive ROS production, triggered by UV radiation and other environmental factors, can lead to DNA damage and the development of skin cancer. MnSOD acts as an antioxidant enzyme, converting superoxide radicals into less harmful hydrogen peroxide, thereby reducing oxidative stress and preserving cellular integrity. Reduced levels of MnSOD have been observed in skin cancer tissues, suggesting its importance in preventing skin cancer. Genetic variations in the MnSOD gene have also been associated with an increased risk of skin cancer. Strategies that support MnSOD activity, such as antioxidant-rich diets and topical application of antioxidants, can

Keywords: Ma a e e ed a e; S ca ce e e - ; O da e e ; Reac e e ec ; ROS; UV ad a ; A - da ; DNA da a e; Ce a e

Introduction

S ca ce e c e f ca ce d de, c ea c de ce a e e ea . U a ead a f e a a fac f e de e e f ca ce . A a a defe e ec a c e ac e da a e ec f UV ad a , ed e e e ca e e e ec a a d ead DNA da a e, da e e , a d a e e f a f ca ce . W be e a e , ead e e ed a e e e , e a e a ec a f ec a a da e a e ace e . e c f a a da e z e c a a e ea ca e , caaa e, a d e de d a e [1]. e e z e a e e ac a ed a a e a a d ze e da a e ec f ROS. H e e , a e a e e e / ac f e e a da c e a e e ce b f ROS- ed a ed a c b e d ea e. Ma d e a e a a da ac a a a a e e e de d a e ed ced a ca ce . F e a e, e de a SOD ac dec ea ed e fe a e e a c e a ce ca c a, ba a ce e e a, a e a be e e fe a e e a c e e a ce de . a e f c e e e a e c e a fe e a da d ce , e e f SOD e c a a ce e e a e , a d d e a ec a fa da d c ca c e e [2].

O e c ca defe e ec a a a da e e e e z e a a e e e de d a e. M SOD a ac ca e e a z a f f ee ad ca e e a ed d da e e , a d e e ce a da a e. a ce e e e e ca ce f M SOD ca ce e e a d e a e a e c ca .

e role of MnSOD in skin cancer prevention

M SOD a a da e z e f d e c d a f a ce , c d e e e . I f c b c e e e de ad ca , c a e e eac e a d da a e , d e e de a d ec a e . c e e , a a e ed ba a ce ce a d e e da e da a e ce a c e , c d DNA. Se e a d e a e de a ed e a ce f M SOD ec a a ca ce de e e . A a de ac M SOD ac a e a ce a ed ce b ca ce e e ed UV ad a . I e e de , e acc a f DNA da a e a d da e e ce a b e ed, ead e e f a a a f a [3].

F e e, a d e a e e ed e c e a be ee M SOD e e a d ca ce . Red ced M SOD e e a ed M SOD ac a e bee a ca ed a e e a ed f ca ce de e e , e a M SOD de ce c c e e ab c ba da e e a d e e ca e e .

Potential therapeutic implications

G e e ec e e f M SOD a a ca ce , e e a c e a e e ed e e a e c e a fe a c M SOD ac e e e a d ea e f d ea e. T ca M SOD f a : A ca f M SOD d ec e e f f ca c ea a , de ca zed ec a a UV- d ced da a e [4]. E c a a ec ca d e a e a ca M SOD ca ed ce da e e , DNA da a e, a d a a ca ed b UV e e. A da e e a . Ce a d e a a da , ca a Ea d e e , a e e a e M SOD e e . I c d e e a da e d e a e a e a ce M SOD ac a d e e e ce a a UV- d ced da e e .

Gene therapy: Ge e e a a a ac e a de e f c a c e f e M SOD e e ce , c e a f a de ce ce e d e M SOD d c . A e

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