



## Allantoin as Metabolic Compound

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Oxidative stress has many important functions in chronic diseases age related. Endogenous antioxidant system such as superoxide dismutase, hydrogen peroxide and catalase may inhibit the effects of free radicals [1].

Antioxidants have been implied to eliminate the risk of chronic disorders by various scientific researches [1-4]. Most of natural sources may have many antioxidant effects in various biological systems in consequence of the presence of different agents as well as the variable nature of products generated by the reaction system [1-5]. Antioxidant compounds have function in the suppression of oxidant compounds in living organisms. Antioxidants, which are produced as a result of metabolic activities in living organisms such as many plants and other organisms, can also be taken *via* external supplementation to human body. In this context, there are many natural antioxidant sources such as plants and mushroom [6-11].

There is increasing experimental and clinical data showing that uric acid plays a significant role *in vivo* as an antioxidant molecule [12]. Uric acid is the end product of purine catabolism in higher vertebrates, reptiles, birds and some other animals. In many other vertebrates, uric acid is oxidized to allantoin by urate oxidase. In some fish, allantoin is converted to allantoic acid by allantoinase. In cartilaginous fish and frogs, allantoic acid is converted into urea by allantoinase. In marine invertebrates, urea is broken ammonia and carbon dioxide by urease. The human organism has not uricase (uric oxidase) because of that uric acid is the end product of this destruction. Mammals other than primates, uric acid can decompose allantoine, urea and ammonia. Allantoin is not only the end product of the metabolism of urea in animals. It also is known to be end product of the metabolism of urea in plants and invertebrates. Allantoin is shown to be cell proliferation (removal of necrotic tissue) and epithelial tissue formation (skin growth) also known to promote healthy tissue and thus new and on wounds. It is also known to show feature antioxidant. Uric acid is an enzymatic end product of endogenous and dietary purine nucleotide metabolism and a power antioxidant and scavenger of free radicals in humans. Uric acid is converted to allantoin by enzymatic oxidation *in vitro* and *in vivo* [12-16].

Allantoin, which is one from a number of uric acid oxidation products, a metabolic compound in most organisms including animals, plants and bacteria [13-15].

Allantoin is the end product of purine catabolism and its chemical structure is formulated  $C_4H_6N_4O_3$  and is also called 5-ureidohydantoin or glyoxyldiureide. It contains high levels of urea. Allantoin is a pharmacologically effective compound. Oxidation of urate to allantoin shows that urate is a scavenger of reactive oxygen species [12,13].

Allantoin has an important role in skin soothing and rapid regeneration of skin cells. It removes corneocytes by loosening the intercellular kit or the desmosomes that maintain the adhesion of corneocytes to each other [12-15]. Due to these activities, allantoin has been used in cosmetic industry in various forms (e.g. some lotions, creams, shampoos, lipsticks, and different aerosol preparations), as well as in topical pharmaceutical agents for treatment of skin diseases nowadays [12-15].

The action of uric acid in case interested with oxidative stress is not completely clear. Evidence basically based on epidemiological works suggests that increased serum levels of uric acid are a risk factor for many diseases where oxidative stress has an important pathophysiological effect [12-16].

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