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Anti Oxidant Activity of Santha Sandhrodhayam by Super Oxide Free Radical Scavenging Activity

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Abstract

Siddha system is one of the best traditional systems in the universe taught by siddhar's. In siddha system of medicine santhasandhrodhayam drug was used for pitha diseases. This medicine contains manjal (*Curcuma longa)* and the juice of lemon (*Citrus limen*). These drugs are helps to improve immunity. This study was carried out to evaluate the antioxidant effect on santha sandhrodhayam and to measure the IC through super oxide free radical scavenging activity. The IC50 value of the drug santha sandhrodhayam is - 246.243µg/mL.

Keywords: santha sandhrodhayam, siddha drug, antioxidant, kayakalpam

Introduction

Siddha system has many internal medicines and external therapies to treat the diseases. kayakalpam is one among them. Kayakalpam means the body as strong as stone. Kayakalpam mainly responsible to allievate the disease and extend the human life. Kayakalpam is compared with antioxidant because the both are reduced the free radicals.Anti oxidant drugs are highly takeplace in siddha medicine.The super oxide free radical scavenging activity which protects from chronic diseases and degenerative aliments due to oxidative stress.Santha sandhrodhayam is a classical siddha formulation. It is used for chronic pitha diseases, which is mentioned in siddha text.

Materials and Methods

Antioxidant activity

Principle

Super oxide is biologically important as it can form singlet oxygen and hydroxyl radical. Overproduction of super oxide anion radical contributes to redox imbalance and associated with harmful physiological consequences. Super oxide anion are generated in riboflavin-NADH system by the oxidation of NADH and assayed by the reduction of NBT resulting in the formation of blue formazan product. Ascorbic acid (10mg/mL) was used as standard.

Procedure

Different concentration of sample such as 125 - 2000µg/ml from a stock solution of 10mg/ml, 0.05ml of Riboflavin solution(0.12mM), 0.2 ml of EDTA solution [0.1M], and 0.1 ml NBT (Nitro-blue tetrazolium) solution [1.5mM] were mixed in test tube and reaction mixture was diluted up to 2.64ml with phosphate buffer [0.067M]. A control without the test compound, but an equivalent amount of distilled water was taken. The absorbance of solution was measured at 560nm after illumination for 5 minutes incubation in fluorescent light and also measured after illumination for 30 min. at 560 nm on UV visible spectrophotometer. ▲OD was calculated [Valentao et al, 2002].

Calculation

$$\% \text{ inhibition} = \frac{control - test}{control} X100$$

Results

Concentration(µg/ml)	OD at 560nm	Percentage of inhibition
Control	0.8896	
Standard: Ascorbic Acid		
125	0.5231	41.19
250	0.4667	47.53
500	0.3318	62.70
1000	0.2106	76.32
2000	0.0829	90.68

Concentration(µg/ml)	OD at 560nm	Percentage of inhibition
Control	0.1272	0
Sample code: SS		
125	0.0989	22.25
250	0.0625	50.86
500	0.0487	61.71
1000	0.0362	71.54
2000	0.0265	79.17

IC50 Value- Ascorbic Acid- 238.357µg/mL (Calculated using ED50 PLUS V1.0 Software)
SS- 246.243µg/mL (Calculated using ED50 PLUS V1.0 Software)

Discussion

In the living human being, free radicals of different forms are continuously produced for specific metabolic requirement. When the generation of these species exceeds the levels of antioxidant mechanism, they cause extensive damage to the cells prominent to oxidative damage of tissues and biomolecules, eventually leading to disease conditions, especially degenerative diseases and extensive lysis. The living system is protected from this by enzymes such as superoxide dismutase, glutathione peroxidase and catalase and certain endogenous antioxidants such as α-tocopherol, ascorbic acid, β-carotene and uric acid. Since the endogenous antioxidants acting as intracellular defense systems protecting cells from free radical damage and extensive lysis, scavenging and diminishing the formation of oxygen-derived species are not 100% efficient, micro nutrients or antioxidants taken as supplements are particularly important in diminishing the cumulative oxidative damage. Santha sandhrodhayam is a herbomineral preparation which has combined drugs of Poritha vengaram (*sodium biborate*) suthi seidha rasakarpooram (*Hydragyrum subchloride*) kappu manjal (*Curcuma longa*) elumichai pazham (*Citrus limen*). The above mentioned drugs has anti oxidant property.

Conclusion

Various disease conditions are associated with free radical oxidative stress. The superoxide radical is ubiquitous in aerobic cells. Although only mildly reactive toward biological molecules, the superoxide radical may be transformed to the highly reactive and damaging hydroxyl radical. All the samples showed good superoxide scavenging potential This study results shows that the antioxidant property of santha sandhrodhayam was validated.

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