

# Exploring the Antioxidant Activity of Homoeopathic Medicine *Ornithogalum umbellatum* Q and 30 C by Nitric oxide Radical Scavenging Assay

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## Abstract

**Background:** Antioxidants are substances that scavenge free radicals; they are frequently utilised in health protection and frequently recommended in healthcare facilities. In the homoeopathic medical system, mother tinctures and diluted homoeopathic medicines are recommended. Mother tincture and potency of therapeutic herbs may be used to treat a variety of acute and chronic illnesses.

**Objectives:** The present study was accompanied to determine the antioxidant activity of homeopathic mother tincture of plant origin and its diluted homeopathic medicine i.e. ornithiogallum umbellatum Q and 30C in comparison with ascorbic acid.

**Methods:** The antioxidant activity was evaluated by Nitric oxide radical scavenging activity. Ascorbic acid was taken as a standard in Nitric oxide radical scavenging activity. Results were expressed as percentage of antioxidant activity (%AA). The concentration of Homoeopathic mother tincture and potency standard is recorded at 100 u g/ ml, 200 ug/ml and 300 ug/ml along with IC 50 value. Lower the IC50 value is better the results

**Results:** Thus the results of antioxidant activity in homoeopathic medicine ornithogallum umbellatum shows there is an antioxidant property present in both mother tincture and its diluted medicine (potency). Hence dilution has higher antioioxidant property in nitric oxide scavenging activity.

**Keywords:** Antioxidants, Homeopathic Mother tincture, Homoeopathic diluted medicine, Free radicals , *Ornithogalum umbellatum*

## INTRODUCTION

Antioxidants are constantly studied due to their ability to trap the free radicals. Highly reactive free radicals formed due to imbalance in the molecular fragments of unpaired electrons in molecular orbit leads to many changes in cellular structures. These free radicals can cause degenerative diseases by oxidizing proteins, lipids, nucleic acids, and DNA. It is well known that antioxidants have a number of positive effects on human health, including improved sleep, protection against neurodegenerative changes, lowered blood pressure and obesity, improved eye vision, protection against liver toxicity, support for the immune system, anti-aging effects, and protection against renal toxicity<sup>[1]</sup>. Our body can be exposed to free

radicals from a variety of environmental sources, such as cigarette smoke, air pollution, and sunlight. An excessive chronic amount of free radicals in the body causes a condition called oxidative stress, which may damage normal healthy cells and lead to chronic diseases. Researchers have also studied antioxidants in laboratory experiments. These experiments showed that antioxidants interacted with free radicals and stabilized them, thus preventing the free radicals from causing the cell damage.

Antioxidants play a very important part in preventing or delaying the beginning of disease by avoiding damage brought on by free radicals. The cellular damage caused by free radicals in the pathogenesis of numerous pathological conditions, such as atherosclerosis, cataract, ageing, cerebro & cardiovascular disorders, diabetes mellitus, hepatocellular injury, skin disease, and carcinoma, may be minimised in chronic disease when homeopathic medicine increases the antioxidants<sup>[2]</sup>

Homeopathic mother tinctures having antioxidant potential and are being used for the treatment of degenerative diseases, infections and chronic ulcerative conditions. Homeopathic mother tinctures of plant origin carry the hydro-alcoholic extracts of medicinal plants with some difference of ratio of alcohol and medicinal plants <sup>[1]</sup>. In Homeopathy High dilution medicines (HDM) are used in research for exploring its concealed properties and understanding its pharmacology. There seems to be an evolution in understanding the literature evidence of the homeopathic high dilution medicines <sup>[1]</sup>

Although antioxidants were discovered in 1900, their use in medicine has only lately attracted interest. The antioxidant nature of homeopathic medicines is supported and confirmed by homeopathic literature. The antimiasmatic character of antioxidants is evident from their ability to prevent and treat chronic diseases such as essential hypertension, metabolic disorders, cardiovascular disorders, cerebro-vascular disorders, cataracts, and carcinomatosis, among others<sup>[2]</sup>.

### Effect of free radicals

Deterioration of the eye lens, which contributes to vision loss, Inflammation of the joints (arthritis), Damage to nerve cells in the brain, which contributes to Parkinsonism's or Alzheimer's disease. Acceleration of the ageing process it leads to Increased risk of coronary heart disease, since free radicals encourage low density lipoprotein (LDL) cholesterol to stick to artery walls. Certain cancers triggered by damaged cell DNA<sup>[3]</sup>

Free radical damage can change the instructions coded in a strand of DNA. It can make a circulating low-density lipoprotein (LDL) molecule more likely to get trapped in an artery wall or it can alter a cell's membrane, changing the flow of what enters the cell and what leaves it<sup>[4]</sup>. Free radicals need to be controlled, as they are responsible for aging, chronic diseases such as heart disease, Parkinson's disease and even cancer<sup>[5]</sup>.

### MATERIALS & METHODS:

Homeopathic mother tincture of *ornithogalum umbellatum* were purchased from Dr. Willmar Schwabe India Pvt. Ltd. (New Delhi) and was labelled as OG1 and OG3 respectively. Then the labelled Homeopathic mother tincture and potency was sent to Biomeitez Research & Development Pvt. Ltd. (Kanyakumari) and the antioxidant activity was evaluated by Nitric oxide radical scavenging activity. Ascorbic acid was taken as a standard in Nitric oxide radical scavenging activity. Results were expressed as

percentage of antioxidant activity(%AA). The concentration of Homoeopathic mother tincture and potency standard is recorded at 100 u g/ ml, 200 ug/ml and 300 ug/ml along with IC 50 value.

## PROCEDURE

### NITRIC OXIDE RADICAL SCAVENGING ASSAY

Nitric oxide radical scavenging activity was determined by Griess Ilosvay reaction using sodium nitroprusside. In a typical experiment, the reaction mixture containing 2 mL of sodium nitroprusside (10 mM) and 0.5 mL of phosphate buffer (pH-7.4) was mixed with 0.5 mL of sample or vitamin-C and incubated for 150 min at 25 °C. After the incubation period was over, 0.5 mL of nitrite was pipetted out and 1mL of sulfanilic acid reagent (0.33% of sulfanilic acid in 2% glacial acetic acid) was added to it and kept for 5 min. Then, 1 mL of 1% naphthyl ethylene diamine dihydrochloride (NEDD) was added and allowed to stand for 30 min at 25 °C. The absorbance of pink colour of the solution was read at 540 nm.<sup>[8]</sup>

The percentage of nitric oxide inhibition was calculated using the following equation:

$$\text{Percentage (\%)} \text{ of nitric oxide radical scavenging assay} = [(A_0 - A_1)/A_0] \times 100.$$

where  $A_0$  was the absorbance of control, and  $A_1$  was the absorbance of the treated sample

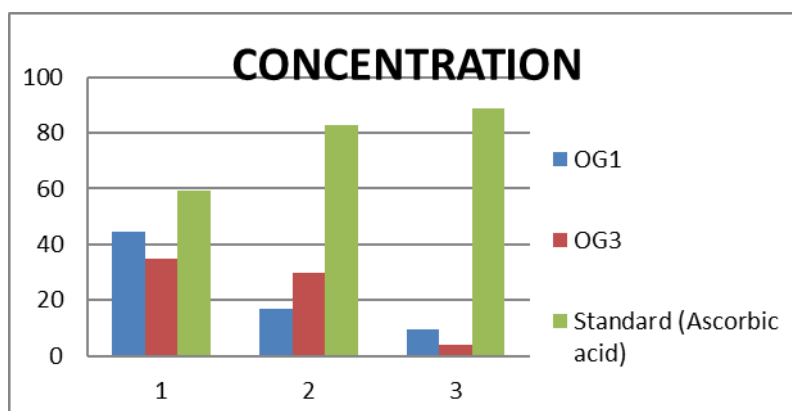
## OBSERVATION AND RESULT

### ANTIOXIDANT ACTIVITY

#### 1. Nitric oxide Scavenging activity

Sample	Concentration			IC 50 Value
	100 µg/ ml	200 µg/ ml	300 µg/ ml	
<b>OG1</b>	44.404 ± 0.049	16.871 ± 0.145	9.742 ± 0.04	<b>48.089</b>
<b>OG3</b>	34.748 ± 0.22	29.941 ± 0.026	3.964 ± 0.055	<b>23.832</b>
<b>Standard (Ascorbic acid)</b>	59.393 ± 0.005	82.576 ± 0	88.759 ± 0.003	<b>13.099</b>

**TABLE 1 – VALUES OF 3 DIFFERENT CONCENTRATION AFTER NITRIC OXIDE SCAVENGING ACTIVITY**



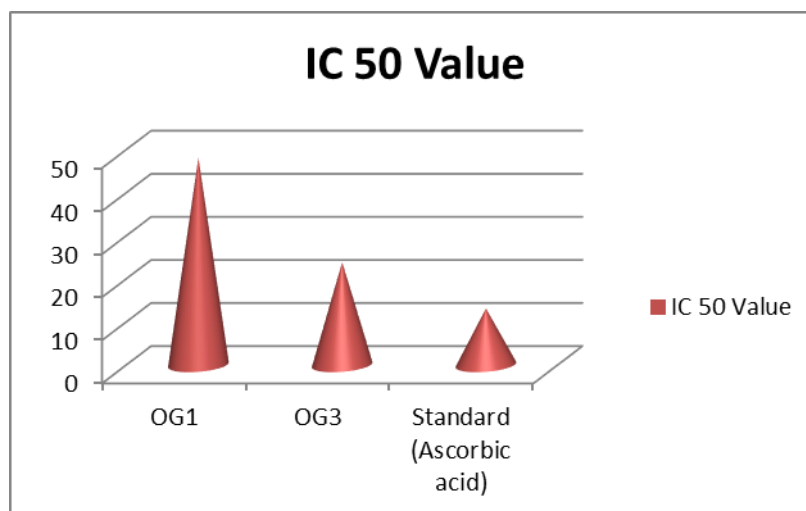
**TABLE -2 – CONCENTRATION LEVELS OF 3 SAMPLES**

In Nitric oxide radical scavenging activity, Ornithogalum umbellatum (OG1) mother tincture shows concentration of 44.404 in 100 u g/ ml, 16.871 in 200 ug/ml and 9.742 in 300 ug/ml.

Ornithogalum umbellatum (OG 30C) potency shows concentration of 34.748 in 100 u g/ ml, 29.941

in 200 ug/ml and 3.964 in 300 ug/ml.

The Standard Ascorbic acid (STD) shows concentration of 59.393 in 100 u g/ ml, 82.576 in 200 ug/ml and 88.759 in 300 ug/ml.



**TABLE-3 IC 50 VALUES OF 3 SAMPLES**

In Nitric oxide radical scavenging activity, the IC 50 Value of Ornithogalum umbellatum Q is 48.089, ornithogalum umbellatum 30C is 23.832, Standard Ascorbic acid is 13.099

## RESULT:

Thus the results of antioxidant activity in homeopathic medicine ornithogallum umbellatum shows there is a antioxidant property present in both mother tincture and its diluted medicine (potency). Hence dilution has higher antioxiidant property in nitric oxide scavenging activity

## DISCUSSION:

Antioxidant study helps to know about the trap of free radicals, these free radicals has the ability to cause chronic diseases, degenerative diseases and also auto immune diseases. When there are a lot of free radicals, which has the tendency to cause diseases and in homeopathy these diseases can be compared with miasms ( Psora, Syphilis, Sycosis). Antimiasmatic nature of antioxidant is obvious by its potential to prevent and or cure chronic disease. Ornithogalum species are reported to exhibit antimicrobial, antioxiidant and antitumor activities. Homeopathic medicine Ornithogalum does also have symptoms of chronic gastritis, flatulence, distension of stomach, pain full sinking across epigastrium, gastric ulcers with haemorrhage <sup>[6]</sup> stomach cancer, vomiting, swollen feeling <sup>[7]</sup> Homeopathic medicines have antioxidant properties which assist the cure of the disease and further more .in this study both the mother tincture and dilutions contains antioxidative properties in nitric oxide radical scavenging assay.

## CONCLUSION:

Thus the study has explained a detail that homeopathic medicine ornithogalum has antioxidant properties which can be used in gastric metabolic disorders, its associated symptoms and anticancerous conditions. But here homeopathic dilutions has more effective action in antioxidant property than in mother tincture which shows that potentized homeopathic medicine has a deeper, effective action to cure the diseases.

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