



## An Antioxidant Properties of Kalmegh (*Andrographis paniculata*)

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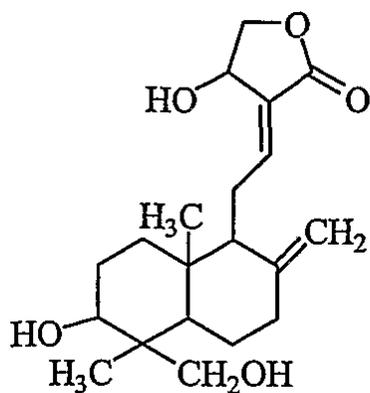
### ABSTRACT

A large portion of the restorative plants have been utilized for therapeutic purposes before ancient period. Among antiquated human advancements India known as rich vault of therapeutic plants. In this paper we examine about cancer prevention agent property of the significant restorative plant Kalmegh. Cancer prevention agent property of this plant is more valuable in person. The status of defensive component against oxidants, the cell reinforcements in human mirror the dynamic harmony between cancer prevention agent protection and peroxidant conditions and have been proposed as a valuable apparatus in assessing the danger of oxidative harm. The point of the current exploration is cell reinforcement movement of leaf separate, stem concentrate and organic product extricate in Kalmegh (*Andrographis paniculata*). We discover *A. paniculata*, natural product extricate shows 87 % higher searching potential than the leaf remove 86 % and stem separate 80.48 % With the ascent in conc. of *A. paniculata* absorbance diminishes and % restraint rises.

**Key words:** Antioxidant , Andrographolide , Diterpenoids , DPPH , Flavonoids , TRIS buffer

## INTRODUCTION

Andrographis paniculata is commonly known as "King of Bitters". also, normally known as creat or green chireta. Its natural name is Andrographis paniculata and it has a place with Acanthaceae family. Its herbaceous plant are found in China, India, Shrilanka and Malasiya. This plant is one of the most exceptionally utilized likely restorative plant in world. Andrographis paniculata has multi reason tropical restorative plant. The antiquated arrangement of medication, its utilized in current prescriptions, society drugs, pharmaceutical intermediates, synthetic elements and furthermore food supplements. [1]. Its excellent wellspring of Antioxidant since its bioactive synthetic constituents is andrographolide. Andrographis paniculata is the generally utilized restorative plant in Ayurvedic, Homeopathic and Unani medication. This plants contains a huge no. of substance constituents essentially flavonoids, lactones, diterpenoids, and so on. Flavonoids for the most part found in the root, however have additionally been confined from the leaves [2]. Cancer prevention agent action and its constituents of A. paniculata have been delineated by different examiners. Oja and Nandava announced that the hydro alcoholic concentrate of A. paniculata [3] It has been generally utilized in Asian nations, notable for its blood filtering property. Its centrality in ailments where blood anomalies are considered as significant reason for sicknesses like-skin emissions, bubbles, scabies and ceaseless fever.



C<sub>20</sub>H<sub>30</sub>O

[Mol. Wt. - 350.46]

**Active Ingredients:**

Marker constituents: *Andrographolide*

Restoratively significant dynamic standards of Kalmegh found in airborne pieces of *Andrographolide*. It is dismal glasslike severe in taste. It is known as diterpene lactone. The significant compound, *andrographolide* from leaf, seed and stem remove showed protein invertase catalyst hindrance against furin. *Andrographolide* skeleton by goodness of protease inhibitory appropriately acted by stifling the proteolytic cleavage of wrap glycoprotein gp 160 of HIV [4]. *Andrographolide* therapy restrained the invitro expansion of various human disease and safe cell lines by applying direct anticancer action at the GO/GI cell line and cytotoxic impact of *andrographolide* [5]. *Andrographolide* and its subordinates separated from *A. paniculata* demonstrated viricidal movement against herpes simplex infection 1(HSV-1) Reyes B.A. et al (2006) discovered antidiabetic possibilities of *M. charantina* and *A. Paniculata* [6]. Component of SOD action of *neoandrographolide* by Kendern R.E. et al. Trivedi et al discovered hepatoprotective and cell reinforcement property of *A. paniculata* in BHC instigated liver harm [7]. Zhang X. F. et al. (2000) discovered Antihyperglycemic and cancer prevention agent property of *A. paniculata*. theethanolic concentrate of *A. paniculata* has an antihyperglycaemic property, however may likewise lessen oxidative worry in diabetic rodents. [8] Cheung, H.Y. et al (2005) found that *andrographolide* prompts cell cycle capture and mitochondrial intervened apoptosis in human H.L. cells [9]. Therapeutically important active principles of Kalmegh found in aerial parts of *Andrographolide*. It is colorless crystalline bitter in taste. It is known as diterpene lactone. The important compound, *andrographolide* from leaf, seed and stem extract exhibited protein invertase enzyme inhibition against furin. *Andrographolide* skeleton by virtue of protease inhibitory properly acted by suppressing the proteolytic cleavage of envelop glycoprotein gp 160 of HIV [4]. *Andrographolide* treatment inhibited the invitro proliferation of different human cancer and immune cell lines by exerting direct anticancer activity at the GO/GI cell line and cytotoxic effect of *andrographolide* [5]. *Andrographolide* and its derivatives isolated from *A. paniculata* showed viricidal activity against herpes simplex virus 1(HSV-1) Reyes B.A. et al (2006) found antidiabetic potentials of *M. charantina* and *A. Paniculata* [6]. Mechanism of SOD activity of *neoandrographolide* by Kendern R.E. et al. Trivedi et al found hepatoprotective and antioxidant property of *A. paniculata* in BHC induced liver damage [7]. Zhang X.

F.et al. (2000) found Antihyperglycemic and antioxidant property of A. paniculata. theethanolic extract of A. paniculata not only possesses an antihyperglycaemic property, but may also reduce oxidative stress in diabetic rats. [8] Cheung, H.Y. et al (2005) found that andrographolide induces cell cycle arrest and mitochondrial mediated apoptosis in human H.L. cells [9].

**Antioxidant property of Kalmegh:**

Cell reinforcement property of Kalmegh -

In nourishments, cell reinforcements have been characterized as a substance that in little amounts can forestall or incredibly hinder the oxidation of effectively oxidisable materials, for example, realities. In organic frameworks the definitions for cell reinforcements has been reached out to any substance that when present at low fixations when contrasted with the oxidisable substrate and altogether delays or forestalls oxidation of that substrate like lipids, proteins, DNA and starches as indicated by Halli well.

For example, Phenol (AOH) is an antioxidant, prevents the oxidation by free radical as:



This H atom transfer reaction effectively stops the chain reaction. Therefore , antioxidants of biological / therapeutic importance. It on transport protiens like transferring albumin ,feritin, ceriplasamin are antioxidants. Medicinal plants like Andrographis paniculata has anti or properties. The leaves, plant extract of stem only, fruit extract are having antioxidant properties[10]

Not with standing, measures of these defensive gadgets present under typical physiological conditions are adequate just to adapt to the ordinary limit of physiological pace of free extreme age. Subsequently any extra weight of free radicals, either from an indigenous or exogenous source on the creature (human) physiological

framework can tip free radical (peroxidant) and against free radical (cancer prevention agent) balance prompting oxidative pressure. The oxidative pressure, characterized as the lopsidedness among oxidants and cancer prevention agents for the previous possibly prompting harm has been recommended to be the reason for maturing and different human maladies . Along these lines, in current Western medication, the harmony among antioxidation and oxidation is accepted to be a basic idea for keeping up a sound organic framework [11]. Any vitiation subsequently, is perceived to offer ascent to clutter in the physiological framework prompting an assortment of illnesses relying on the affectability and powerlessness of the organ. Consequently, the status of defensive component against oxidants, the cell reinforcements in human mirror the dynamic harmony between cancer prevention agent guard and prooxidant conditions and have been proposed as a helpful apparatus in assessing the danger of oxidative harm.

Cancer prevention agents may apply their belongings by various instruments, for example, stifling the arrangement of dynamic species by diminishing hydroperoxides ( $ROO'$ ) and  $H_2O_2$  and furthermore by sequestering metal particles, rummaging dynamic free radicals, fixing or potentially clearing harm. Thus, a few cancer prevention agents likewise prompt the biosynthesis of different cell reinforcements or protection catalysts. The bioactivity of a cancer prevention agent is reliant on a few components like their basic measures, physico-concoction qualities and in vivo radical producing conditions. The entire conversation focuses to one property, that is Antioxidant property which mends and assists with recuperating the various illnesses [12].

**Materials and Methods :**

1. **Preparation of concentrate** : The natural products, leaves were cut into pieces and air dried at room temperature. The dried organic products were coarsely sieved and effectively removed with methanol utilizing Soxhlet extractor at a temperature of 55-60°C for a time of 7-8 hrs.

2. **Preparation of Reagents and extract of A. paniculata** :The 500 µm arrangement of DPPH was made by utilizing 23 mg of DPPH (Assay 85 %) of Hi Media Laboratories Pvt. Ltd. CAS No. 1898 – 66-4 TRIS [2 – amino - 2 (hydroxyl methyl)propane 1-3 ol] Buffer pH 7.4 was made by including 0.60 gm. Of TRIS cradle 7.4 of Qualigens Fine Chemicals in 30 ml. of water.and including 0.33 ml of conc. HCL, Diluted to 100 ml with refined water. The utilization of TRIS support was to forestall the unexpected pH exchange during the preparation of test weakenings. Different weakenings of Methanolic concentrate of leaves and organic products were being made with grouping of 125,205,375,500,625,750,875,1000,1125,&1250 µgm per 0.5 ml. in methanol were readied. Different weakenings of Butylated Hydroxytoluene were made with convergence of 5,10,15,20,25,30,35,40,45&50 µgm per 0.5 ml. of methanolic arrangement.

3. **Measurement of Antioxidant Activity** :The cell reinforcement action was resolved on premise of free radical rummaging movement of stable 1,1 Di Phenyl - 1-2 picryl Hydrazyl (DPPH).In 5 ml. Volumetric flasks included 2 ml of DPPH arrangement + 0.5 ml. of TRIS Buffer + 2 ml. of Methanol + 0.5 ml. of arranged weakenings. Likewise the Control Absorbance of DPPH was taken by supplanting 0.5 ml. of arranged weakenings with methanol. The absorbance of all further made weakenings made in 5 ml. volumetric flasks were taken following 30 minutes at  $\lambda$  max 517 nm utilizing methanol as clear. The rate hindrance was determined utilizing the equation:

$$\% \text{ Absorbance} = (A_c - A_s) / A_c * 100$$

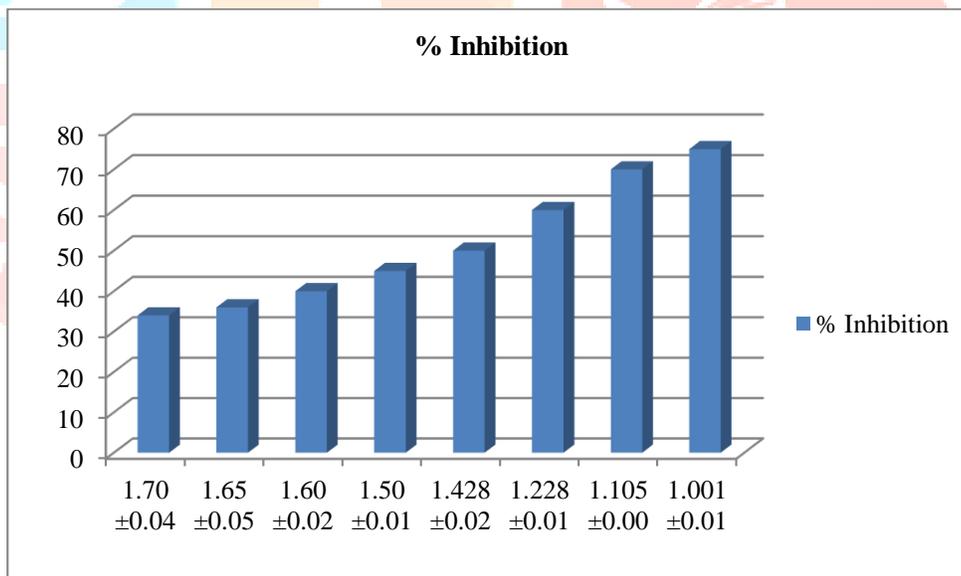
Where,  $A_c$  is absorbance of control; similar to the absorbance of test. IC50 esteem (a focus at 50 % hindrance) was resolved from the bend between rate restraint and fixation. All conclusions were done in triplicate.

**Result and Discussion :-**

**Table No. 1**

**Value of Absorbance and % Inhibition with increase in concentration of Methanolic extract of *A. paniculata***

S.No.	Concentration	Absorbance	% Inhibition
1.	125	1.70 ±0.04	34
2.	250	1.65 ±0.05	36
3.	375	1.60 ±0.02	40
4.	500	1.50 ±0.01	45
5.	625	1.428 ±0.02	50
6.	750	1.228 ±0.01	60
7.	875	1.105 ±0.00	70
8.	1000	1.001 ±0.01	75



1. With the rise in conc. of *A. paniculata* absorbance decreases and % inhibition rises.

2. % inhibition =  $\frac{Ac-As}{Ac} \times 100$

Ac = absorbance of control,

As = absorbance of sample

Decolorisation due to reaction of antioxidants in samples with the stable free radical DPPH was measured spectrophotometrically. In the present work on *A. paniculata*, fruit extract shows 87 % higher scavenging potential than the leaf extract 86 % and stem extract 80.48 %

**Conclusion :-**

The status of protective mechanism against oxidants, the antioxidants in human reflect the dynamic balance between antioxidant defence and prooxidant conditions and have been suggested as a useful tool in estimating the risk of oxidative damage. Antioxidants are those substance in foods which prevent or retard the oxidation of easily oxidisable materials such as fats. Phenols and flavonoids have potentiality to act as antioxidants and prevent many diseases. In this present work *Andrographis paniculata*'s fruit extract shows has highest inhibition rate (87%). Andrographolide, is main active constituent of *A. paniculata*, it is a diterpenoid lactone having pharmacological effects specially used in Ayurveda, Unani, homoeopathy and Chinese medicine system. So we find that the methanolic extract exhibited the greater anti-oxidant activity in fruit and leaves also. *A. paniculata* is easily grown in any type of soil, weather and location. Its medicinal properties are very useful for different type of disease and major effectiveness of this plant has antioxidant property.

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