



## NANOTECHNOLOGY IN ALLIUM SATIVUM LINN WITH SPECIAL EMPHASIS TO ANTI-ANGIOGENESIS

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### ABSTRACT

The current investigation deals with the anti-angiogenesis study by the *Allium sativum* using nanotechnology. *Allium sativum* extract Nano particle subjected to in-vitro assay for angiogenesis studies. The in-vitro study performed and revealed that *Allium sativum* extract nano particle possess high anti-angiogenic activity compared to positive control, thus this works support the anti-angiogenic activity which was already done by authors<sup>[1]</sup>

**KEYWORDS** : natural product, *Allium sativum*, Nano particle, anti-angiogenesis

### INTRODUCTION

Natural product being known as naturals .The entire pharma industry is looking forward to theme back to nature .The effectiveness of natural product is increasing by converting to them nano particled size. These natural products are commonly found in plant and microorganism, have been used for therapeutic purpose since last year's. The use nano technology with natural product is quickly emerging field .Nanotechnology provides much benefits to the delivery of natural product in the treatment of various disease. Some natural compounds have anticancer, anti thrombotic and anti oxidant properties [2]. Nano particles can enhance both therapeutic index and pharmacokinetics of plant origin drugs .Plant origin drugs have occupied lead position in pharma industry .Analyzing the chemical properties of the natural product is crucial for drug designing<sup>[3]</sup>

Garlic is native to central Asia, but has spread to world long time ago. Garlic (*Allium sativum*), belongs to family Liliaceae, holds abundant natural compound that are useful in treatment of various types cancer, especially Allicin –a organo sulfur compound possessing antioxidant, antithrombotic and anticancer activities .Recent studies have proved that Garlic and its organosulfur components effectual inhibitor of the malignant tumor growth.[4] In this article we will discuss particularly the comparative anti-angiogenesis activity between normal garlic extract and nanoparticle sized garlic extract

### MATERIAL AND METHODS



#### COLLECTION GARLIC SAMPLE

The garlic samples were collected from munnar of Kerala State, India. The garlic samples were kept in Phytochemistry department of Uwin Life science, Malappuram. The collected samples were then coarsely powdered<sup>[5]</sup>

#### PREPARATION OF GARLIC EXTRACT NANO PARTICLE

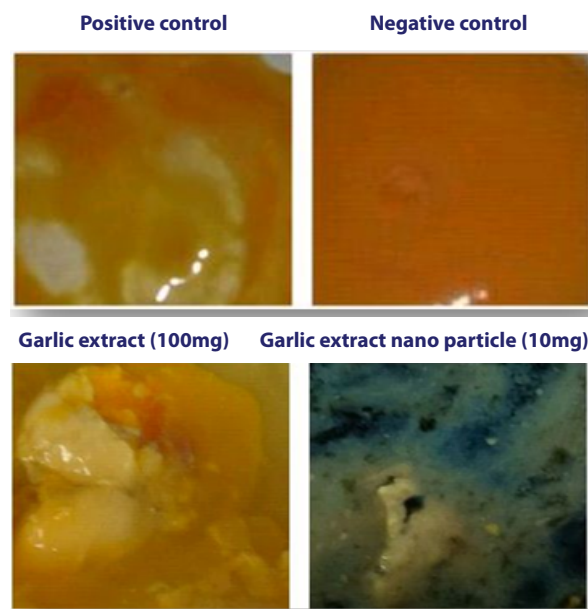
In this study garlic extract nanoparticle prepared by Emulsification solvent diffusion method, which first developed by Niwa et al. employing PLGA. In this method chitosan solution used for

nanoparticle preparation based on partial miscibility of an organic solvent with water .After cellulose, chitin polysaccharide is found in nature abundantly. Chitosan obtained by partial N-deacetylation of chitin, a natural polymer biopolymer found in crustacean cells, also see in some microorganism, fungi and yeast. Injection of organic phase into chitosan solution produce an oil/water emulsion through mechanical stirring followed by high pressure homogenization. To reduce organic solvent miscibility in water, emulsion is diluted large volume of water. Then diffusion of organic solvent in water occurs, that result polymer precipitation, leading to the formation of Garlic extract nanoparticle. Emulsification solvent diffusion method is suitable for hydrophobic drug and proved high percentage of drug entrapment. For this method, harsh process conditions and high shear forces are needed in nanoparticle preparation.<sup>[6]</sup>

### IN VITRO ANTI- ANGIOGENESIS ASSAY

Process of angiogenesis is studied in different experimental models [7-11]. For this research work fertilized egg collected from chicken farm Palakkad of Kerala State, India. In this assay we injected positive control Cinnamaldehyde, normal garlic extract and nanoparticle sized garlic extract into eggs with different concentration and incubated with negative control were maintained at 37°C for 17 days

### RESULT



### CONCLUSION

The present work deals with the implementation of Nanotechnology in natural product .Here I reveals that the garlic

which already known anticancer agent, when it converting to Nanoparticled size the activity is significantly increasing .Angiogenesis is common nowadays which is reason for the infant death even for abortion .Thus we recommend garlic in its Nanoparticled form can prevent the disastrous stage up to extend

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