



ANTICANCER ACTIVITIES OF HIBISCUS AND NANOTECHNOLOGY

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Abstract: Nanotechnology evolved as the achievement of science in the 21st century. Nanoparticles are the tiny material (<1000nm in size) is commonly referred to as a nanoparticle or ultrafine particle. The use of different plant parts for the synthesis of nanoparticles is considered as a green technology. This technology is one of the best eco-friendly methods & does not give any harmful effect. Hibiscus rosa sinensis, a member of the Malvaceae family that has raised interest thanks to its anti-inflammatory, antioxidant and anticancer effects in this work. We evaluated the antitumor effect of enriched fraction of Hibiscus sabdariffa (Alessia-Malacrida, Jacopo Erriguez evaluation of antitumor effect Hibiscus). Nanoparticles have played a key role in the enhancement of radiation therapy by acting both as a therapeutic as well as a carrier for other therapeutics. The synthesis & characterization of nanoparticles was confirmed by UV-visible spectrophotometer, Fourier Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM). The study revealed that H-rosa sinensis synthesis nanoparticles exhibit good & anticancer activity.

Index Terms - Nanoparticle, hibiscus rosa sinensis, UV, SEM, FTIR, Anticancer activity

I. INTRODUCTION

Nanoparticle is related to broad multidisciplinary fields. The word nanoparticle is derived from the Greek word "nanos" which means dwarf. Nanoparticles are used in various different types of areas like as in tissue engineering, in the pharmaceuticals, aerospace, and microelectronics industry in the production, processing, protection and packaging of food etc. Example: Silver nanoparticles are having antibacterial and anticancer activity rarely nanotechnology has started its application in the most diverse domains used in medical area.

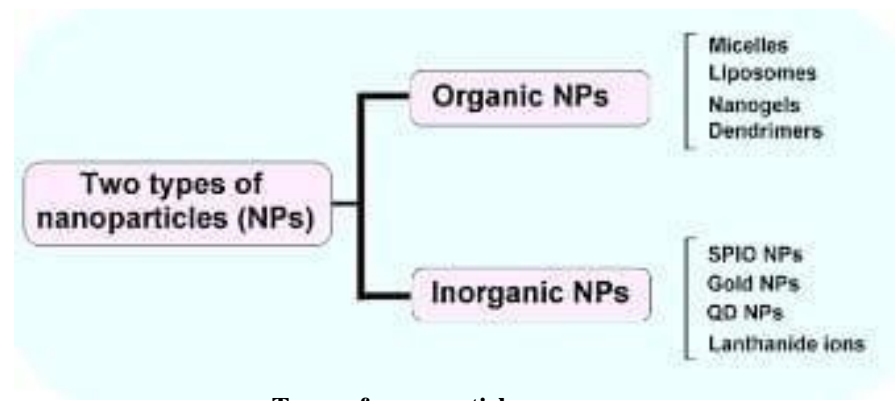
I. ROUTES OF ADMINISTRATION

Oral and Intravenous are the most common routes of administration used to administer drug through conventional preparations like Solution, emulsion, suspension and Solid pharmaceuticals & for tablets, capsules, etc.

II. TYPES OF NANOPARTICLE

In the preparations of anticancer drugs Hibiscus are used. Hibiscus shows anticancer activity. Hibiscus Rosa Sinensis also called China rose. It is obtained from plant. It is obtained from the flowering plants.

- **Family:** The family of Hibiscus is Hibiscus tribe of Malvaceae family.



Types of nanoparticle

III. CHEMICAL CONSTITUTION

- Hibiscus contains Flavonoids, Anthocyanin's, Terpenoids, steroids, polysaccharides, alkaloids, amino acids, lipids Sesquiterpene, Quinone's, and Naphthalene group.
- It contain Carbohydrate, tannin, cardiac Glycoside, Saponin, and protein are present.
- It contain starch, steric acid, formic acid, ethanol, acetic acid are present.

Structure

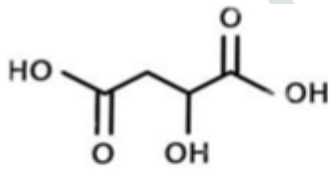


Fig 1. Formic acid

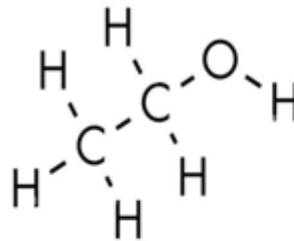


Fig 2. Ethanol

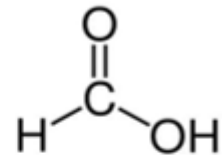


Fig 3. Malic acid

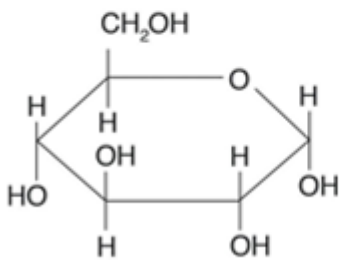


Fig 4. Carbohydrates

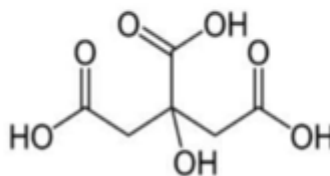


Fig 5. Citric acid

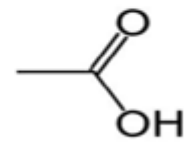


Fig 6. Acetic acid

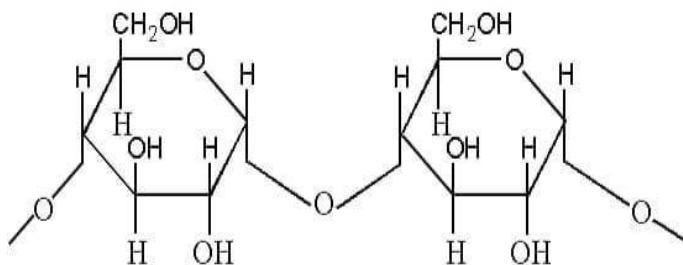


Fig 7. Starch

Hibiscus having double layer of corolla. In this Hibiscus included both part male and female. It's present in same plant and in the some flower. The root is a branched taproot, and stem is exact, green, aerial, branched and cylindrical. The Hibiscus having many activities such as antimicrobial, antifungal, antioxidant, anticancer, antidiabetic, antifertility, hair growth promoting neuroprotective, and anti-inflammatory antipyretic , immune response, an hyperlipidemia and wound healing properties.

Hibiscus are used as contraceptive agent:

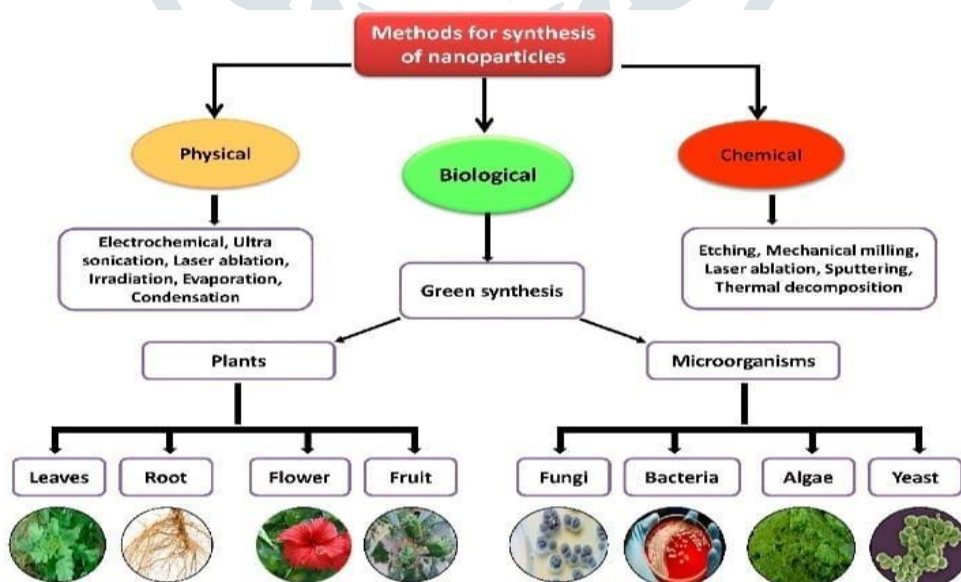
- Antibacterial agent - Hibiscus contains antibacterial activity.
- Antioxidant agent - Hibiscus having Antioxidant activity was rated by evaluation of flavonoids contents total phenolic.
- Antidiabetic agent - Hibiscus show the anti-diabetic activity. Hibiscus on to treat hyperlipidemia , , hyperglycemia, Anticholesteromia are also managed by using hibiscus.
- Anticancer agent- Hibiscus also detected anticancer activity. Hibiscus are Helpful in all type of cancers.
- Hair Growth promoting agent-. Hibiscus are commonly used in preparations of Hair oils and in the shampoos. Hibiscus are very effect in the Hair Growth.

Cancer is dangerous disease. It is characterized by uncontrolled proliferation of cells that divide uncontrolled. Cancer from genetic deregulation or motion that form acute or chronic exposure to xenobiotic or environmental pollutants cancer are these diseases in which cancer cell can spread to different organs in the body, this process is called metastasis. In the treatment of cancer chemotherapy also used surgery and radiation therapy also used.

These therapy depend on its pathophysiology and clinical sign and symptoms of the disease. Those drugs used in therapy have poorly water soluble. Hydrophobic drugs are most important to be administered in higher dosages to achieve therapeutic concentrations low solubility reduced drug bioavailability and high systemic toxicity.

Chemotherapy drug also affected on healthy tissue and causes the adverse drug reaction. In these way the Combination targeted oriented drug delivery system and controlled release can be alternative to avoid some limits of conventional chemotherapy and nanotechnology.

IV. METHOD OF PREPARATION



V. APPLICATION

- The results of anticancer study showed that the treatment of cancer cells with Nanoparticle decreased the number of cells. Significantly as compared to control cells.
- The Nanoparticle Hibiscus specimen showed a better inhibiting property than Nanoparticle Curcumin which is attributed to their uniform dispersion & Small Size.
- Ag nanoparticle have intrinsic antibacterial and anticancer properties.
- Gold Nanoparticle may have benefits that make suitable for the Photothermal treatment of cancer such as they can be administered into the local tumor area while minimizing non-specific distribution.

VI. CONCLUSION

In this review, nanoparticle of commonly referred to as a nanoparticle or ultra-fine particle were synthesized using hibiscus leaf extract by varying the ratio of metal salt & the extract. The nanoparticle were characterized by UV, Fourier Transform Infrared spectroscopy (FTIR), Scanning Electron Microscopy (SEM) measurement.

VII. REFERENCES

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