

## A Review on Panax Ginseng - a Universal Panacea in the Herbal Medicine with Diverse Pharmacological Spectrum.

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### ABSTRACT:-

Ginseng is the most famous Chinese plant in the world and one of the most popular herbs in China. Traditional Chinese medicine has developed as an important part of alternative and complementary medicine over thousands of years with its own therapeutic system and diagnostic theories in Asian countries, especially China. In most parts of the world, especially in Western countries, ginseng has been widely used in recent decades and has become known for its important role in the treatment and prevention of numerous diseases. Panax Ginseng consisted of a number of active ingredients such as ginsenosides, nitrogenous substances, carbohydrates, phytosterols, organic acids, essential oils, amino acids, peptidoglycans, repeats, nitrogenous compounds, fatty acids, vitamins, minerals and other phenolic compounds. Ginsenosides are divided into two main groups: protopanaxadiol (PPD) and protopanaxatriol (PPT). The pharmacological effects of ginseng extracts include central nervous system effects, antipsychotic effects, sedative effects, protection against stress ulcers, increased gastrointestinal motility, anti-fatigue effects, endocrine effects, improved sexual behavior, acceleration of metabolism or synthesis of carbohydrates, Lipids, RNA etc proteins. Further clinical research is needed to discover the numerous substances contained in ginseng and their impact on public health.

The effects of supplemental dietary creatine and a botanical extract consisting of ginseng and astragalus were evaluated in 44 adults aged 55-84 years participating in a 12-week strength-training program. Participants consumed creatine only (Cr), creatine plus botanical extract (CrBE), or placebo (PL), and performed bench press, lat pull down, biceps curl, leg press, knee extension, and knee flexion for 3 sets of 8-12 reps on 3 days per week

for 12 weeks. The 1-repetition maximum for each exercise, body composition (full-body DEXA), blood lipids, and mood states were evaluated before and after the intervention.

**Key words:-**Ginseng, herb , Creatine , sedative effect , panax ginseng , Anti diabetes activity, Pharmacological action.

### I. INTRODUCTION:-

Ginseng is a medicinal plant that is often used to treat various diseases. Ginseng has been shown to have pharmacological effects in the treatment of cancer, diabetes and cardiovascular disease and is used to support immune function and the central nervous system (CNS). Function, stress reduction and antioxidant effects (Jung and Jin 1996). Panax C. A. Meyer's ginseng root, also called Korean or Asian ginseng, has been a valuable and important folk medicine for more than 2,000 years in East Asian countries, including China, Korea and Japan. Panax comes from the word "panacea," meaning cure for all diseases and source of longevity as well as physical strength and immunity. As the use of traditional Chinese herbs for medicinal and dietary purposes becomes more popular in Western countries, sales of P. ginseng are increasing in North America and Europe, as well as other regions of the world. In ancient times, medical practitioners treated patients through shamanism or used materials that were available in their area, such as plants, animals or alcohol. However, these practitioners may not have utilized therapeutic knowledge, and patients may have not received satisfactory medical care. Over time, by trial and error, therapeutic strategies using readily available materials were established, as demonstrated by evidence unearthed from ancient tombs (e.g., the Mawangdui tomb), including the Wushier Bing Fang ). Over time, medical information

accumulated, and medical practitioners used many suitable medicinal plants or animals for the treatment of diseases, including ginseng.

The main bioactive components of *P. ginseng* are ginsenosides, a group of saponins with a dammarate-triterpene structure (Huang 1999). Nearly 50 ginsenosides have been isolated from the root of *P. ginseng* (white and red ginseng), and new structures continue to be identified, particularly in *Panax quinquefolius* (American ginseng) and *Panax japonica* (Japanese ginseng), as well as in their berries (Gillis 1997; Yoshikawa et al. 1998, Attele et al.2002; Christensen 2009). In this chapter, we examine the structural and pharmacological properties of ginseng and its active ingredients, including ginsenosides, polysaccharides, and polyacetylene alcohols. The pharmacological and clinical applications of ginseng, particularly ginsenosides, are discussed in the context of its anticancer, antidiabetic, immunomodulatory functions and improvement of central nervous system functions, including learning, memory and neurodegenerative diseases.

#### Ginseng:-

This plant is mainly used to strengthen the proper functioning of the body, increase resistance to stress and improve sexual function. Ginseng is generally well tolerated, but a possible interaction between the herb and warfarin has been observed.

#### Plant Taxonomy :-

Kingdom: Plantae  
Department: Angiosperms  
Subdivision: Eudicots  
Class: Asteridae  
Order: Apiales  
Family: Araliaceae  
Subfamily: Araliaceae  
Gender: Panax  
Species :-Ginseng

#### Common Name:-

American Ginseng, Asian Ginseng, Chinese Ginseng, Five Finger Ginseng, Japanese Ginseng, Jintsam, Korean Ginseng, Ninjin Ginseng, Oriental Ginseng, Schinsent, Sengng and Sang, Tartar Root, Western Ginseng

#### Botanical description :-

*Panax ginseng* belongs to the family Araliaceae and is found throughout East Asia and Russia.11,12 It originally grows in the isolated forests Of Manchuria and North Korea, but has

been collected in more than Other parts of Asia.4 It is cultivated in Korea, China and Japan for export and use as a medicinal plant. *Panax Ginseng* is a shade-loving, deciduous perennial with five-fingered leaves and tiny white flowers, red berries, and a yellowish-brown root.5-7, The root has medicinal uses, although the active ingredients are found in all other Parts of the plant.The root of *Panax Ginseng* is a thick structure that resembles a human shape, which corresponds to its Chinese name Jen Shen, or “human root.”5 *Panax* Comes from the Latin word “panaceum,” which refers to its historical uses in many diseases. There are two different forms of *Panax Ginseng*, red ginseng and white ginseng. The difference lies in the processing method, which creates different pigment compositions ; White ginseng is made by harvesting Roots and drying them in the sun6, while red ginseng is steamed after harvesting and drying Roots. The content of ginsenoside compounds is slightly different in the red and white form The growing time also influences the Ginsenoside content, with the roots of plants older than five Years being stronger than those of plants one or two years old.6,7 Ginseng is a perennial herbaceous plant that has long been known for its fame. Remedy And the aphrodisiac properties of its aromatic root. The genus name *Panax* reflects the alleged value of several types of ginseng as a panacea. The unbranched stem is 20 to 40 cm long.



Fig:- Root Of Panax Ginseng



Fig :- Fruit of Panax Ginseng

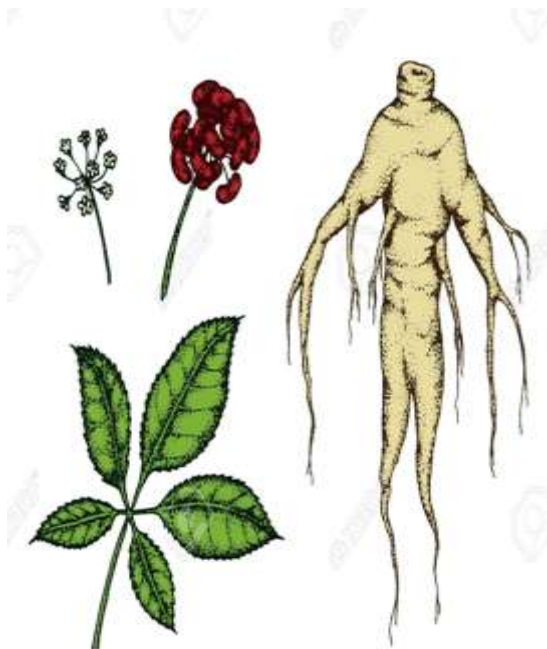


Fig :- Leaves, Flower of Ginseng

#### Phyto Chemical Constituents:-

Panax Ginseng contains triterpene glycosides or saponins, commonly known as ginsenosides. Many active compounds can be found in all parts of the plant, including amino acids, alkaloids, Phenols, proteins, polypeptides, and vitamins B1 and B2.6 Up to 40, Different ginsenosides have been identified by Thin layer chromatography (TLC). And methanol extraction experiments.6,13 The nomenclature of

Ginsenosides is  $R_x$ , where  $x$  is the retention factor (Rf) value of the sequence of Points on the TLC from bottom to top. The two main subtypes of Ginsenosides, protopanaxadiol and protopanaxatriol, are classified According to the arrangement and number of sugar residues glucose, Rhamnose, xylose and arabinose – according to ginsenoside.Rb1, Rb2, Rc, And Rd are examples of protopanaxadiol ginsenosides. Re, Rf, Rg1, And Rg2 are examples of protopanaxatriols.5-7,13 These Ginsenosides have different concentrations in panax ginseng extracts from red and white ginseng due to different processing methods that Affect the deacetylating enzymes . In the raw Plant.

#### Pharmacokinetics:-

Current studies support the hypothesis that ginsenosides are activated by intestinal bacteria through deglycosylation and esterification.15 The glycosides protopanaxadiol and protopanaxatriol Are absorbed into the blood or lymph and transported to the target tissue for esterification with stearic, oleic or palmitic acid substances. Fatty acids. The conversion into the metabolites ginsenoside, M1 (20S- Protopanaxadiol, 20-O-B-D-glucopyranoside) and M4 (20S-Protopanaxadiol) influence the excretion and utilization of the metabolites.

#### Mechanism of action :-

Panax ginseng is often referred to as an adaptogen, suggesting that it has multiple effects on the body that support non-specific resistance to biochemical and physical stress, improve vitality and longevity, and enhance mental abilities. Analyzes Interpret indicate that Panax ginseng has immunomodulatory effects through actions on the hypothalamic-pituitary-adrenal (HPA) axis. In vitro experiments have shown increased natural killer (NK) cell activity and an increase in Phagocytic immune responses Cells after exposure shown to ginsenoside . According to a 1999 World Health Organization study, ginseng saponin is believed to “reduce serum prolactin levels and thereby increase libido” in male impotence.

#### Pharmacological Activity:-

##### Antisterile effects :-

The study was designed using an untreated control group and found Evidence that Panax Ginseng may improve sperm count and motility And thereby increase male fertility. Panax ginseng is also thought to help prevent cancer and combat chemical addiction, but scientific evidence

to support these uses is currently scant. Numerous in vitro and animal studies have examined interactions of Panax ginseng with carcinogenesis, apoptosis, Angiogenesis, and metastasis.

#### **Adaptogenic activity :-**

Many studies have examined the effects of oral Panax ginseng. On animals under extreme conditions, ginseng examines stress. The results suggest that ginseng increases physical endurance and causes physiological changes that can help the body adapt to adverse conditions. In addition, mouse studies have shown that people consumed Panax ginseng, before they were significantly exposed to the virus, increased survival rate and number of antibodies produced. However, most of these studies go far beyond modern scientific standards.

#### **Treatment of colds and flu :-**

A double-blind, placebo-controlled study of 323 people found significant evidence that American ginseng extract at a dose of 400 mg per day can help prevent colds. 33 participants who took the extract for 4 months long used, people suffered fewer colds than people who took a placebo. Comparative advantages were also seen in the percentage of participants who had two or more colds, as well as the severity and duration of cold symptoms they had. Similar benefits were also observed in a study involving 43 people. 34 Additionally, two double-blind, placebo-controlled studies suggest that Panax quinquefolius may prevent flu-like illness in older adults. 35 A double-blind, placebo-controlled study suggests that Panax Ginseng may also help prevent flu-like illness. 36 The study involved 227 participants from three medical practices in Milan, Italy. Half of the people received ginseng at a dose of 100 mg per day, and the other half received a placebo.

After four weeks of the study, all participants received the Flu vaccine. The results showed a significant decrease in the incidence of Colds and flu in the treatment group compared to the placebo group (15 cases versus 42). In addition, antibody measurements increased more in response to vaccination in the treatment group than in the placebo group. A double-blind, placebo-controlled study showed that Panax Ginseng may improve some aspects of mental function. 37 In a period of 2 to 1 Monthly, 112 healthy middle-aged adults received Ginseng or placebo.

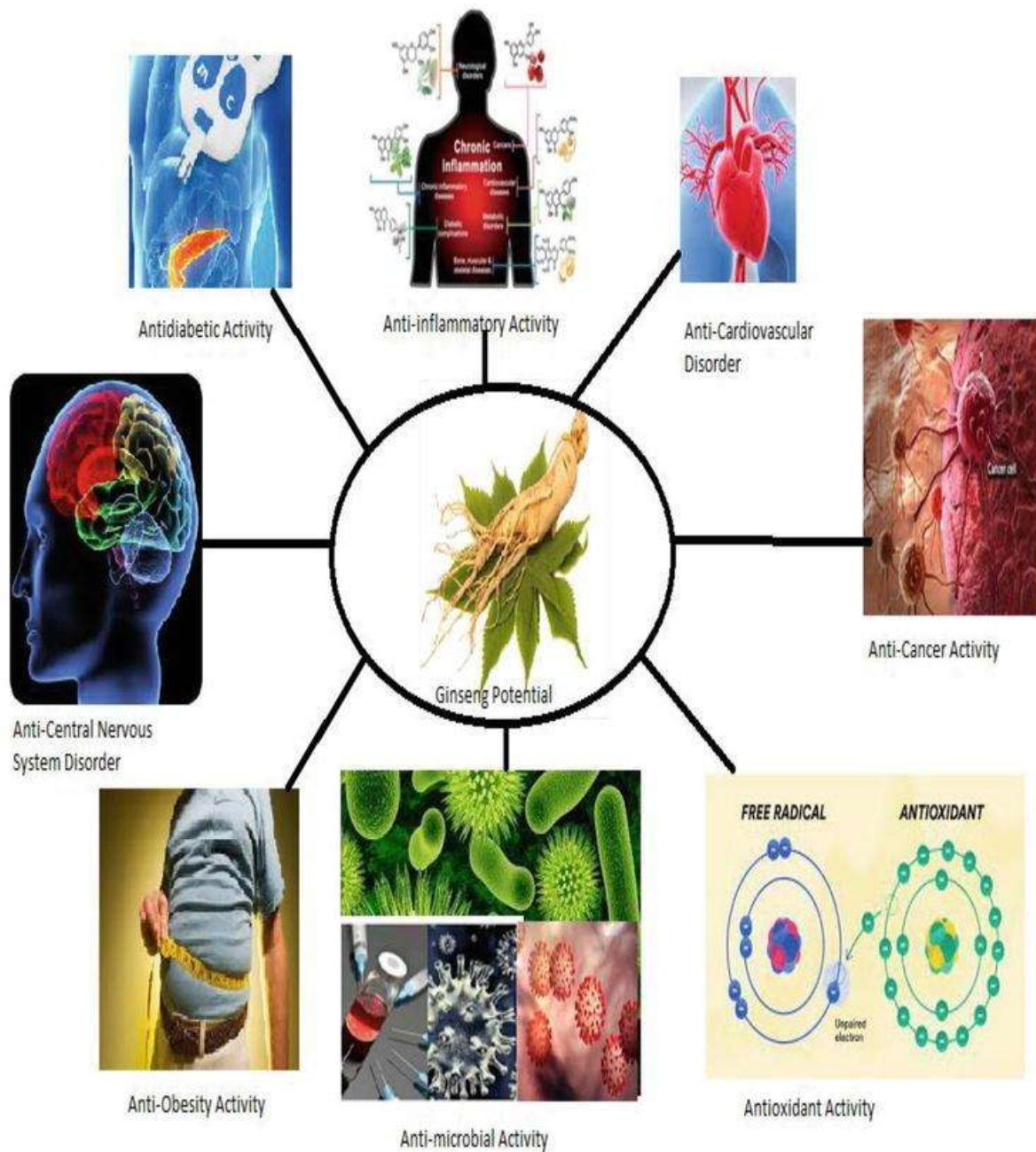
The results showed that Ginseng improved abstract thinking skills. However, there were significant changes in reaction time, memory, concentration or overall subjective experiences between the two groups. Another double-blind, placebo-controlled study involving 50 men found that eight weeks of treatment with Panax ginseng extract improved the ability of subjects to perform a detailed task. 38 A double-blind study of 16 healthy men showed positive changes in the ability to perform mental calculations in subjects who received P Ginseng for 12 weeks.

#### **Memory power enhancing activity:-**

Several studies have shown that Panax Ginseng can improve mental function. More comprehensive benefits were observed in the double-blind, placebo-controlled trial of older adults. Researchers found that 50 or 100 days of treatment with Panax Ginseng resulted in improvements in many measures of mental function, including memory, attention, concentration, and coping skills. 40 The benefits were always visible between ages 50 and 98. Rest of the day. However, virtually no improvement was observed in the placebo group, which is a very unusual result and raises questions about the accuracy of the study.

**Athletic Performance :-** The evidence that Panax Ginseng is the best sports supplement is mixed. The 8-week, double-blind, placebo-controlled study examined the effects of Panax Ginseng with and without exercise in People. Of the participants received ginseng or a placebo and then exercised, or Remained without exercise the entire time. I study. The results showed that ginseng improved the aerobic capacity of People who did not

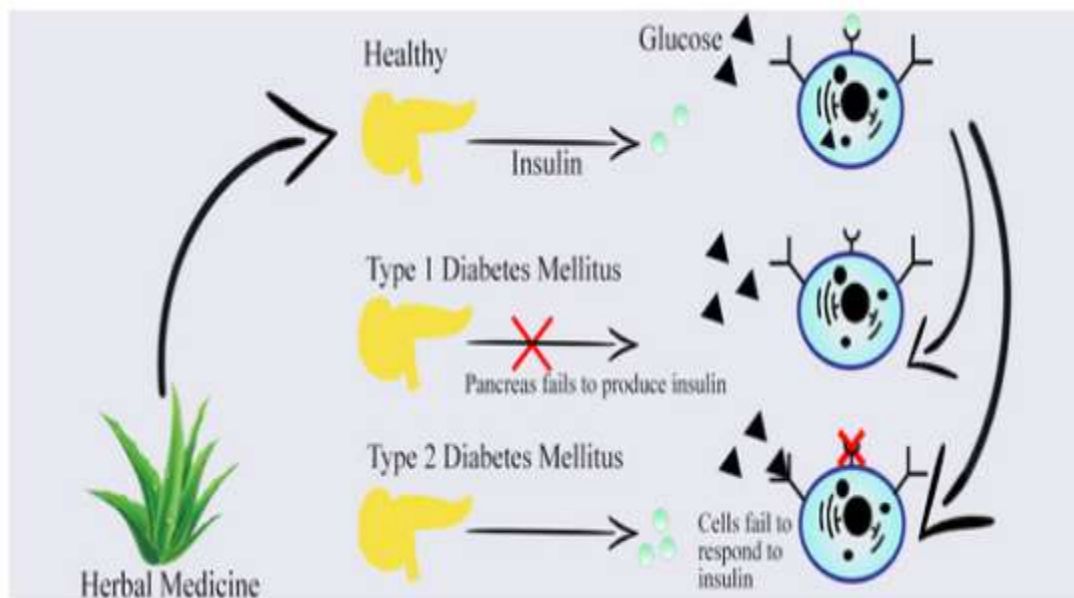
exercise, but provided no benefit in People who did exercise. In a 9-week, double-blind, placebo-controlled study of 30 well-trained athletes, treating People with Panax Ginseng alone or in combination with vitamin E resulted in Significant improvements in aerobic fitness. Another double-blind study of People A placebo-controlled study with 37 people also showed about Benefits.



**Anti Diabetic Activity :-**

Various medical texts refer to Panax Ginseng because of its beneficial use in regulating blood sugar levels.<sup>2,10</sup> In a randomized double-blind study, Sotaniemi et al. examined the effectiveness of Panax ginseng in newly diagnosed patients with type 2 diabetes. Parameters measured included fitness, mood, serum lipids, fasting blood glucose, hemoglobin A1c (HbA1c), amino-terminal propeptide concentration (PIIINP), and body weight. Serum PIIINP levels are associated with coronary artery disease and was used as a safety parameter in this study. Study participants, (n=36), received 100 mg ginseng extract, 200 mg ginseng extract, or placebo daily for eight weeks. Compared to the placebo group, the group that took 200 mg of ginseng reported improved mood, improved physical performance, and reduced fasting blood sugar. Authors concluded that ginseng deserves further research as an adjuvant in the treatment of diabetes. A 12-week randomized double-blind study examined the effect

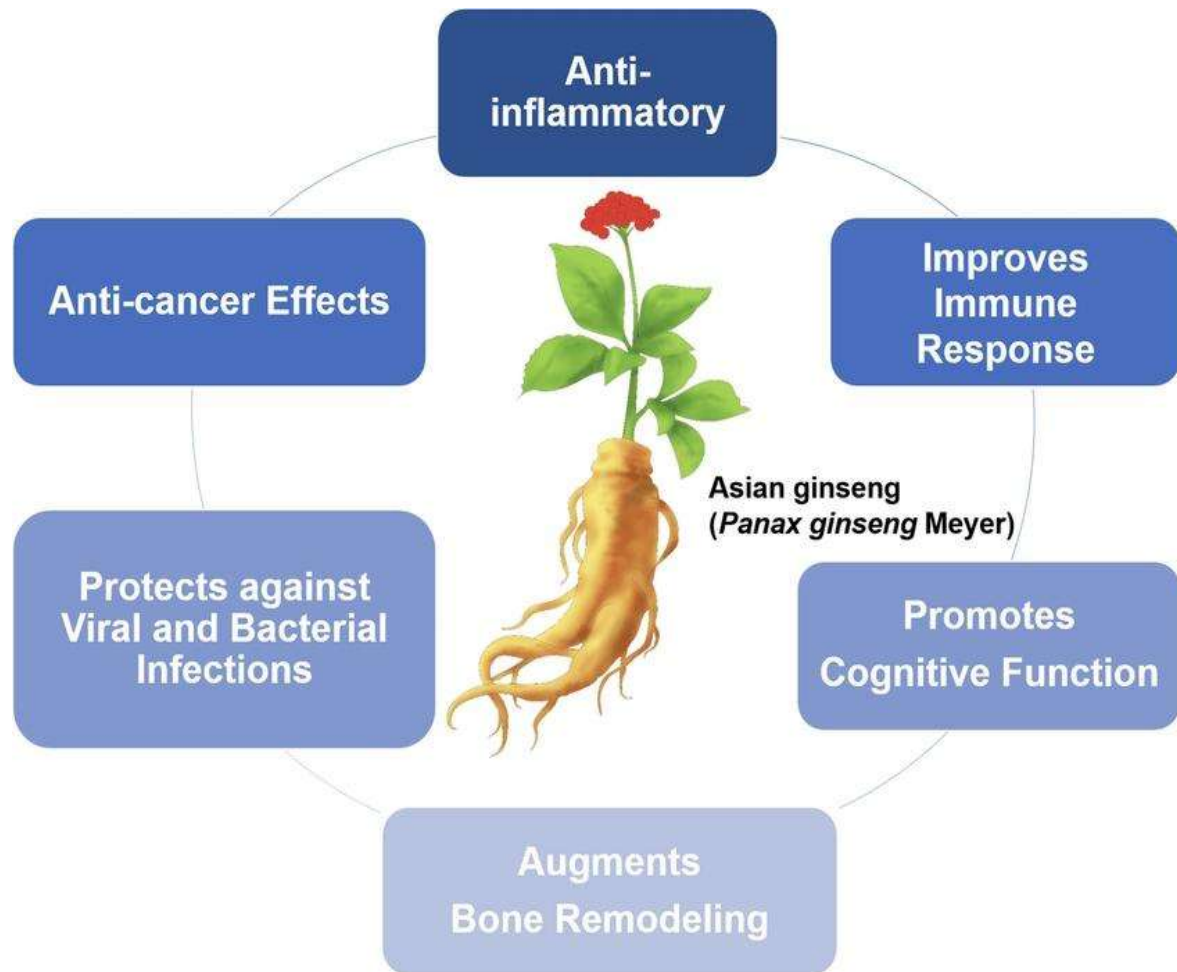
of Panax Red ginseng on HbA1c levels in 19 patients with well-controlled type 2 diabetes. Study participants received 2 g of ginseng or one three, Times daily Placebo day before meals. Plasma glucose and insulin levels, insulin sensitivity and oral glucose tolerance were secondary indicators of efficacy, while monitoring of blood pressure and tests of blood glucose and liver and kidney function assessed safety. Although no changes in HbA1c levels were observed with ginseng, participants remained well controlled during study without drug intervention: the average HbA1c level was 6.5%. In the ginseng-treated group, a significant decrease of %, corresponding to 8-11%, and a 33% decrease in plasma insulin, corresponding to (p < 0.05), were observed in the oral glucose tolerance test, compared to % in the ginseng-treated group. Placebo group group. No changes in safety parameters were reported during the study, leading the authors to conclude Panax Red Ginseng is safe for the treatment of type 2 diabetes treatment



**Anti inflammatory Activity :-**

A recent paper has suggested an anti-inflammatory role for Panax Ginseng in a progression to promotion in a Carcinogenesis

model.<sup>47</sup> Panax Ginseng affects multiple points in the Inflammatory cascade, including inhibition of cyclooxygenase-2 (COX-2), inducible nitric oxide synthase (iNOS) and nuclear factor kappaB.



#### Drug botanical Interaction: -

According to a study by Blumenthal et al. There are Known interactions between Panax Ginseng and medicines, according to the German Commission E.50,51, Interactions. Caution is advised when using phenelzine, Coumadin and oral antidiabetic agents at the same time. , Insulin and caffeine, based on preclinical studies and Proposed mechanisms of action. A recent review by Seely et al. recommends cautious use of Panax Ginseng during pregnancy and breastfeeding, although no specific teratogenic or hormonal disrupting effects have been reported.

#### Side Effects and Toxicity:-

Panax ginseng is associated with low toxicity; Approximately Adverse events have been reported when used appropriately. Adverse events were associated with high doses and long-term use, resulting in Cases being referred to as ginseng abuse syndrome in the literature, although Cases

were investigated. In connection with the ginseng abuse syndrome were rejected by several authors: . Side effects such as high blood pressure, Nausea, diarrhea, headaches, chest pain, insomnia and skin rashes were rejected .

#### Contraindication:-

The German Commission E and the World Health Organization report no known contraindications to the use of Panax Ginseng under number . It is recommended during pregnancy and breastfeeding as there are no controlled clinical studies on humans. 3,8 Teratogenicity has been documented in Rats in an in vitro embryo model, but its impact on human health is questionable as doses used exceed possible human exposure. .52 In Asian countries, Panax Ginseng is used in TCM preparations . Is common throughout pregnancy and breastfeeding.

## II. CONCLUSION:-

Since the beginning of civilization, medicinal plants have provided many clues about how to combat diseases. A thorough examination of the Literature revealed that Panax Ginseng. It is widely considered a universal panacea in herbal medicine and has a wide range of pharmacological effects. This versatile medicinal plant is a unique source of Different types of chemical compounds that are responsible for Different plant activities. Therefore, extensive research is required to understand their therapeutic benefits in disease control. A drug development program should be undertaken to develop modern medicines containing , Compounds isolated from Panax Ginseng. As the global scenario is now shifting towards the use of non-toxic herbal products for traditional medicinal purposes, emphasis should be placed on developing modern medicines based on Panax Ginseng . To combat various diseases.

Panax Ginseng holds enormous potential and deserves special attention from the scientific community to become a milestone for medical science in this millennium due to its diverse medicinal applications. Further evaluation of Panax Ginseng should Be carried out to explore the hidden areas and its practical clinical applications that can be used for the benefit of humanity.

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