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IMMUNOMODULATORY EFFECTS OF PANAX-GINSENG IN COVID-19

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ABSTRACT

Now a days covid-19 is the biggest problem not only in Asia through all over the world. until its outbreak covid-19 from the city of Wuhan in China & affected many other developed & developing countries across the world. WHO declared covid-19 as a pandemic 11th February 2020, until it's declared as a pandemic its infected lakhs are people across the globe. Due to its no vaccination or no other particular Medicine, it infected very rapidly human to human transfer, the common symptoms of virus are cough, sneezing, fever, and other common cold like symptoms. Many of drugs tasted remaining its outbreak but particular nothing has found for covid-19 disease. Many scientists are concentrated in the natural product for finding a preventive cure of covid-19. This Coronaviruses Syndromes divided into: 1. Middle East respiratory syndrome-related coronavirus (MERS-CoV), β-CoV, 2. Severe acute respiratory syndrome coronavirus (SARS-CoV), β-CoV, 3. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), β-CoV. The main things are immunity system of our body. Immunity system is the layer of resistance of outside particle and pathogens in our body. Mini scientist successfully increases our immunity system by many natural products. Ginseng is one of the most affordable natural products for boosting immunity, ginseng has Panaxadiol, and many others glycosides with are affected to boost our immunity successfully. It is successful to enhance our immunity power by its immunomodulatory effect.

KEYWORDS: MERS, SARS, COVID, Immunomodulator, Ginseng.

INTRODUCTION

Ginseng or Panax species is a natural Immunomodulator. This is mainly found in Korea, China, Russia and Other Eastern part of Asia. It is very useful to boost our immunity. After a long day ago, it is used is founded in the Chinese System of medicine. It increases the natural resistance (non-specific resistance) and enhances the power of overcome the illness and exhaustion. In Old days ginseng, was used for a number of aliments, like curing the giddiness and prolonging life of elderly and diabetic persons. It also effective in Viral infections; Covid-19 is the most infections viral disease in current situations. It's sprayed through man to man. Our immunity systems protect ourselves from this type of Pathogens, if we can boost our immunity, then Our immunity system makes us more protective from this type of Pathogens or Pathogens like Others Substances.[1]

Synonyms: Panax, Asiatic Ginseng, Chinese Ginseng, Ginseng Root, Pannag, Ninjin.

Biological Source of Ginseng: It consists of dried roots of *Panax ginseng* C.A. Mey and other species of Panax like *Panax japonicus* (Japanese Ginseng), *Panax pseudoginseng* (Himalayan Ginseng), *Panax quinquefolius* (American Ginseng), *Panax trifolius* (Dwarf Ginseng) and *Panax vietnamensis* (Vietnamese Ginseng), belonging to family Araliaceae.

Figure-1: Panax ginseng root.

The Relations of Covid-19 with Ginseng (as a Immunomodulators)

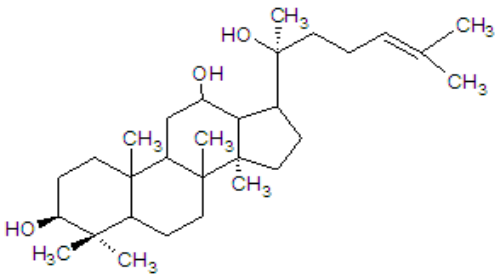
Our immunosystem is more effective systems in our body, Coronavirus or Covid-19 is affected our immunosystem and the it moves forward in our body. We already know the RNA sequence of the virus very well, naturally, and that's allowing us both to track mutations and to lay out exactly what proteins it forces a cell to make once it gets ahold of the machinery. There aren't very many in total – viruses in general are rather stripped-down. Recall that they start off by forcing the expression of a long polypeptide that (with the help of hijacked cellular proteins) starts cleaving itself into many of these necessary viral pieces, an alarmingly compact and efficient "autoloader" mechanism. The limited number of viral proteins means that you can usually assign a clear and necessary function (or more than one) to every one of them – it's a lot like working at a small startup! There are no associate VPs in charge of facilitation of planning modalities in a viral genome; they are lean and mean and that means that they are stark naked examples of evolution in action as well. Recall that the guiding principle of evolution is "Whatever works". That's literally it, and nowhere more so than in something as small and as quickly reproducing as a virus. Viruses live it – the only thing they do is make more virus. There are no added complications for something like feeding behavior, because they don't eat. There are thus no variations in metabolism, because they don't *have* any metabolism. There are no crazy features driven by sexual selection, because they don't mate. They infect cells and make more virus, and that's it and they do it very quickly, over and over. Any change that even slightly assists in infecting cells and making more viral particles that can make more viral particles will be amplified, any change that slightly decreases that efficiency will disappear.

Figure-2: Corona virus and infection beyond immunity power.

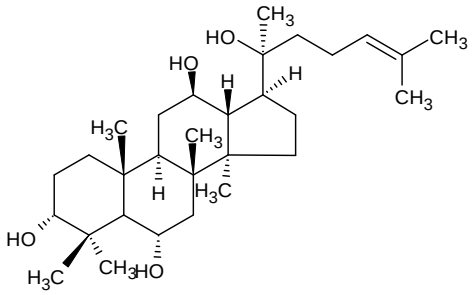
The human immune system has, broadly speaking, two branches. You have the adaptive part, the one that raises specific neutralizing antibodies and targets T cells at an infection.[2] That one takes a while to get going; there's a lot to sort through and building up all those targeted weapons doesn't happen overnight. You have the innate immune system, which is the "always on" response that recognizes a number of general signs of infection and is ready to act immediately. If that by itself can clear an infection, it certainly will – otherwise it sorts of holds the line until the adaptive immune system can range in the artillery and commence firing. For viruses, the innate immune system is mostly recognizing weirdo RNA species as a sign of infection – these are things that shouldn't be floating around, and when they show up it sets off the alarm. The receptors that pick these things up (such as the Toll-like receptors, TLRs) set off some serious transcription factor activity, namely NF-kappaB and various interferon regulator factors (IRFs). These head down to the DNA level and alter transcriptional activity, which has a lot of downstream sequels, too: for example, type I and type III interferon proteins (depending on the cell type) start being produced, which in interferon-stimulated genes. Over 300 of those are known, so we can see that listing all the effects is a task that gets out of hand really fast, which is a common problem in immunology. These interferons can be secreted to warn neighboring cells, and in addition, a whole list of chemokines are produced and excreted to recruit various types of circulating white blood cells. Viruses that affect organisms (like us) with such defenses have had plenty of brutal selection pressure, and the pathogens we notice now are the ones that have assembled ways of infecting us anyway. The list of viral countermeasures is a long one – this battle has been going on for a while. Many of these come down to hiding as much as possible from the cellular receptors as well as blocking them and their downstream partners with specific viral products. An immune system varied and powerful enough to immediately wipe out every foreign pathogen could be hard to contain; we have enough problems with autoimmune disease as it stands and a pathogen that ripped right through its host's defenses and ran at full speed might well be quickly lethal, which could cut down on the opportunities for spreading. The successful pathogens (looking at the situation from their viewpoint) are the ones that spread in a way that leaves them constant opportunities for growth. during infection with the current coronavirus to the past SARS and MERS cornaviruses as well as several other (non-corona) respiratory viruses and it turns out that the SARS-CoV-2 is an unusual one: it manages to block the

interfeon-I and III response quite thoroughly, while setting off a larger-than-normal cytokine secretion response.[3] None of the other viruses studied have that profile. If you add IFN-I back to the infected cells in culture, they clear the virus very strongly – the machinery is working, but it's just not being engaged. Likewise, the overall transcriptional profile of the virus in cells is unique. It's not that it sets off more changes; in fact, it actually shows fewer transcriptional differences than the other viruses it's being compared to. But the pattern of genes that are affected is a new one. There's plenty of expression of a whole list of chemokines, that's for sure: CCL20, CXCL1, IL-1B, IL-6, CXCL3, CXCL5, CXCL6, CXCL2, CXCL16, and TNF. These cell culture results carried over quite well to animal models of infection (ferrets, in this case). Looking at nasal epithelial cells from the infected animals over time, the same lack of interferon response and strong cytokine secretion was observed, with what the authors describe as "*a unique gene signature enriched for cell death and leukocyte activation*". Compared to influenza A virus infection in the same ferret model, the coronavirus transcriptional response was much less dramatic, but very distinctive. The team was even able to check transcription in human lung tissue (2 post-mortem samples compared to 2 different healthy patients). That's a very small sample, necessarily, but it showed a very similar profile: no interferon upregulation and plenty of cytokine transcription. They were able to check circulating levels of these in a larger number of patients 24 infected cases viruses 24 uninfected controls), and these results were also consistent: they tested negative for interferon, but showed elevation of CXCL9 (which attracts T cells) and CXCL16 (which attracts NK cells), CCL8 and CCL2 (recruiting monocytes and/or macrophages), and CXCL8 (which attracts neutrophils). A sudden oversupply of these cell types might be behind the pathology of the disease, which could be characterized, if these hypotheses are correct, as a uniquely imbalanced response: far too little interferon and far too many cytokines, too early.[4]

Chemical constituent Of Ginseng: Ginsenosides, known as ginseng saponins, are the major components of ginseng and are classified into two major groups by the type of their aglycones, namely protopanaxadiol (PPD) and protopanaxatriol (PPT).[5] PPD and PPT have dammarane triterpenoidal skeletons with sugar moieties binding at C-3, C-6, and C-20 positions. The genuine structures of the PPD and PPT ginseng sapogenins are dammar-24-ene-3β,12β,20(S)-triol (PPD) and dammar-24-ene-3β,6α,12β,20(S)- tetrol (PPT), respectively. Ginsenosides, which are named as ginsenoside Rx (x = o, a1, a2, b1, b2, b3, c, d, e, f, g1, g2, h1, and h2), differ from one another by the type of aglycone, sugar moieties, number of sugars, and their site of attachment. Exceptionally, ginsenoside Ro is an oleanane-type saponin, which is common in plants. Another oleanane-type of ginsenoside is polyacetylene ginsenoside Ro, which contains a polyacetylenyl ester at the C-6′ position of glucosyl moiety. These ginsenosides are usually extracted through water/n-butanol partitioning, following the extraction of ginseng root with aqueous alcohol, resulting in n-butanol extract as a saponin fraction.



Structure-01: Photopanaxadiol.



Structure-02: Photopanaxatriol.

Ginseng contains several valuable nonsaponin components, including essential oils, antioxidants, polyacetylenic alcohols, peptides, amino acids, polysaccharides, and vitamins. Ginseng polysaccharides have also been a target of chemical and biological research, because plant polysaccharides generally show antitumor effects through modulation of innate immunity. Two acidic polysaccharides, which are named ginsenan S-IA and ginsenan S-IIA, were isolated from *P.ginseng*. Ginsenan S-IIA was shown to increase phagocytosis. Many immunological studies have been performed with crude polysaccharide fractions, which are usually prepared by ethanol precipitation after the extracting ginseng root with hot water.

Enormous progress has been made in understanding the chemistry of ginsenosides in transformed or metabolized forms as well as intact ones, contributing to the understanding of ginseng pharmacological properties. However, further studies on nonsaponin constituents, especially immunomodulating polysaccharides, and on the interaction and/or harmonization of constituents still remain to be explored.

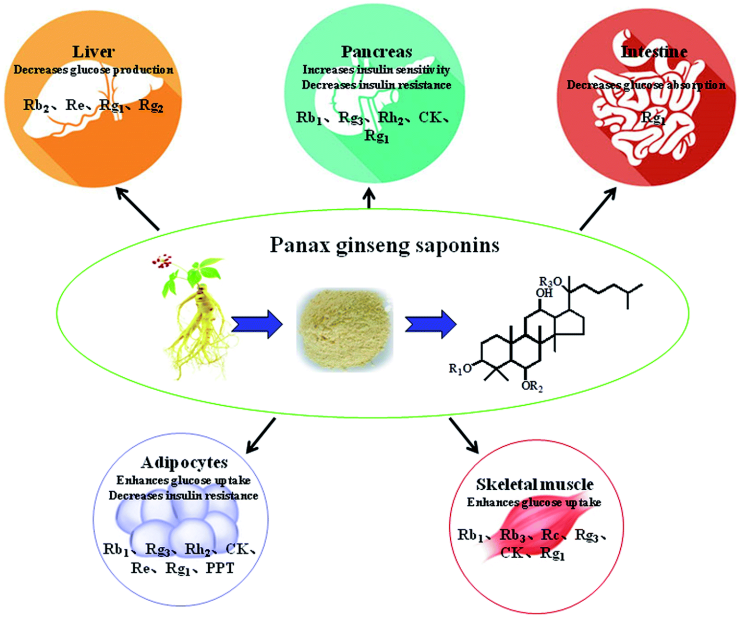


Figure-3: Biosynthesis of Panax ginseng saponins and effect in human body.

Immunomodulatory function of Ginseng

There have been many reports describing the immunomodulating effects of ginseng, although results are somewhat controversial and inconsistent, since the chemical composition of purified fractions of ginseng employed in studies is different. Through, we describe the immunomodulating effects of aqueous extracts, saponin fractions, and polysaccharide fractions of ginseng.

Imunomodulating Effect of Aqueous extract of Ginseng: Aqueous extracts of ginseng contain amino acids, minerals, saponins, and various water-soluble low- and high-molecular weight compounds. It was reported that a ginseng extract modulated the cytokine production in a mouse model with *Pseudomonas aeruginosa* lung infection. The lung cells from the ginseng extract-treated group produced more interferon γ (IFN-γ) and tumor necrosis factor α (TNF-α), but less interleukin 4 (IL-4), with a higher ratio of IFN-γ/IL-4. Results indicated that a ginseng extract treatment induced a Th1-like immune response (cellular immune response) in the mice with *Panax aeruginosa* lung infection. Long-term oral administration of the ginseng extract appears to potentiate humoral immune response but suppresses spleen cell functions in male BALB/c mice. Mice treated with ginseng extract and immunized with ovalbumin (OVA) resulted in an eightfold increase in titers of anti-OVA immunoglobulin G (IgG) in serum, but IgG production was not affected in spleen cells. Intranasal coadministration with inactivated influenza virus A (PR8) and ginseng extract increased the levels of influenza virus-specific antibodies and neutralizing activities and provided protective immunity compared to immunization with PR8 alone. Ginseng extract coadministration also significantly induced high levels of IL-4 and IL-5 cytokines4, producing cells after PR8 infection, implying that ginseng extract plays a role as a mucosal adjuvant against influenza virus as well as an immunomodulator during influenza virus infection.

Figure-4: Boosting of human immune system.

Immunomodulating Effect of Saponin fraction: Dendritic cells (DCs) play a pivotal role in the initiation of T-cell-mediated immune responses, making them an attractive cellular adjuvant for use in cancer vaccines. Researchers investigated whether M4, end products of steroidal ginseng saponins metabolized in digestive tracts, can drive DCs maturation from human monocytes in vitro. Results showed that mature DCs differentiated with M4 induced the differentiation of naive T cells toward a helper T-cell type 1 (Th1) response and

augmented cytotoxicity toward tumor cells. suggested that M4 might be used on DC-based vaccines for cancer immunotherapy.

In the case of ginsenoside Rg1, it was reported that Rg1 enhanced CD4(+) T-cell activities and modulated Th1/Th2 differentiation in murine splenocytes. Rg1 had no mitogenic effects on unstimulated CD4(+) T cells but augmented CD4(+) T-cell proliferation on activation with anti-CD3/anti-CD28 antibodies in a dose-dependent manner. Rg1 also enhanced the expression of cell surface protein CD69 on CD4(+) T cells. In Th0 condition, Rg1 increased the expression of IL-2 mRNA and enhanced the expression of IL-4 mRNA on CD4(+) T cells, suggesting that Rg1 prefers to induce Th2 lineage development. In addition, ginsenoside Rg1 induced Th1 type differentiation of CD4(+) T cells and helped mice resist disseminated candidiasis. Antimouse IFN-γ antibody treatment of Rg1-treated mice abolished the protection against disseminated candidiasis.[5]

PPD saponins (Rg3, Rd, Rc, Rb1, and Rb2) and PPT saponins (Rg1, Re, and Rg2) were evaluated for their adjuvant effects on the immune responses to OVA in BALB/c mice. OVA-specific antibody responses were significantly higher in mice immunized with OVA co-administered with Rg1, Re, Rg2, Rg3, and Rb1, but not with Rd, Rc, and Rb2. Therefore, it is suggested that Rg1, Re, Rg2, Rg3, and Rb1 have more potent adjuvant effects than the others. Recently, it has been reported that ginsenoside-based nanoparticles (ginsomes) played a role as a novel adjuvant and upregulated Th1 and Th2 immune response in imprinting control region (ICR) mice. The ginsomes were spherical with diameters ranging from 70 to 107 nm and contained ginsenosides Rb2, Rc, Rb1, and Rd. The ginsomes promoted significantly higher IgG responses, increased the levels of specific IgG1, IgG2a, IgG2b, and IgG3, as well as T and B lymphocyte proliferation in response to concanavalin A, LPS, and OVA. The enhanced IgG titer and subclass levels paralleled the increased production of IFN-γ (Th1 cytokine) and IL-5 (Th2 cytokine). Therefore, ginsomes as an adjuvant are assumed to upregulate both Th1 and Th2 immune responses.

Immunomodulating Effect On Polysccharide Fraction: Polysaccharide fractions of ginseng are high-molecular weight compounds obtained from the water-soluble and ethanol-insoluble fractions of ginseng. The in vitro immunostimulating activities of polysaccharides from ginseng were investigated. Four polysaccharides, which were found to be homogeneous by gel-filtration chromatography, were prepared and designated PF3111, PF3112, PBGA11, and PBGA12. Component sugar analysis revealed that they were **heteroglycans** with molecular weights ranging from 37 to 760 kD, composed of glucose, galactose, arabinose, mannose, and xylose in different molar ratios. Fraction PBGA12 had the most anticomplementary activity, which is mediated through both alternative and classical pathways. All the polysaccharides except PBGA11 induced the production of IFN-γ in the presence of concanavalin A. They induced the production of significant amount of TNF-α in cell cultures.[6]

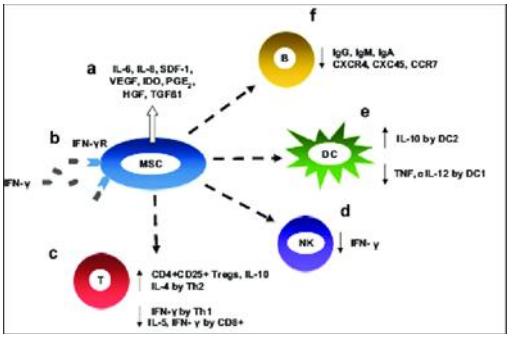


Figure-5: Incubation of murine macrophages.

Incubation of murine macrophages (RAW 264.7 cells) with increasing amounts of polysaccharide fraction of ginseng showed a dose-dependent stimulation of inducible nitric oxide (NO) synthesis. This was associated with an incline in inducible nitric oxide synthase (NOS) mRNA levels as determined by semiquantitative polymerase chain reaction, and electromobility shift assay studies indicated enhanced nuclear factor κB (NF-κB) DNA binding activity. suggested that polysaccharide treatment could modulate several aspects of host defense mechanisms due to stimulation of the inducible NOS. It was also reported that a polysaccharide fraction of ginseng stimulated murine normal splenocytes by inducing the mRNA expressions of Th1- and Th2-type cytokines and also restored the mRNA expression of IFN-γ, Th1 cytokine, after its inhibition by whole-body γ irradiation. Therefore, the polysaccharide fraction of ginseng was found to restore the T lymphocytes function that had been suppressed by γ irradiation in allogeneic mixed lymphocyte reactions. More recently, reports on the acidic polysaccharide of *P.ginseng* (APG) were described. Acidic polysaccharide fractions altered the phenotype of bone marrow cells (BMCs) and increased the viability and alloreactivity of BMCs after γ irradiation both in vitro and in vivo. A pretreatment with APG significantly increased the viability of BMCs against γ irradiation. APG-treated BMCs had a

significantly higher amount of IL-12, which is a major cytokine for immune responses, compared with the medium-treated BMCs. The expression of major histocompatibility complex (MHC) class II molecules of APG-treated BMCs was also increased, and APG-treated BMCs showed significantly higher levels of allogeneic CD4(+) T lymphocyte proliferation. Furthermore, APG-treated mice had a larger number of BMCs after γ irradiation than the control mice, and the BMCs of APG-treated mice were successfully cultured into DCs, which are the representative antigen-presenting cells.

Various aspects of immunomodulatory effects of ginseng have been investigated for their tonic effects. Modulation of cytokine production, potentiation of humoral immune response, enhancement of CD4(+) T-cell activities, upregulation of adjuvant effects, restoration of T lymphocytes function, and BMCs viability after suppression by γ irradiation were especially remarkable.[7]

Ginseng as Adjuvant: Adjuvants play an important role in vaccine formulations by increasing the immunogenicity of co-administered antigens. When appropriate adjuvants are administrated with a supplied antigen, they can enhance immunization effects while keeping the injected antigen to a minimum and protect their recipients from deadly infectious diseases. Adjuvants can act in various ways to increase antigen presentation and to stimulate the immune system. For example, adjuvants may act as a depot for the antigen and present the antigen over a long period of time to maximize the immune responses. They can also induce mucosal immunity, regulate antibody avidity, specificity, or isotype, and stimulate cytotoxic T lymphocytes. Many substances have been developed as adjuvants. Inorganic aluminium salts such as aluminium phosphate and aluminium hydroxide are one of the most common adjuvants in human vaccine. In addition, oil emulsions, polymers, carbohydrates, liposomes, LPSs and other bacterial toxins are also used to augment immune responses. Ginseng extract has been applied as an immunologic adjuvant and ginsenosides are believed to be the key molecules that have adjuvanticity among the whole ginseng extract. There are about 30 **ginsenosides** present in *P. ginseng* and their ability as an adjuvant is dependent on their characteristic structural features. In general, ginseng has no immunogenicity by itself. However, their combinations with antigens or other adjuvants can promote and enhance immune responses against immunized antigens.[8]

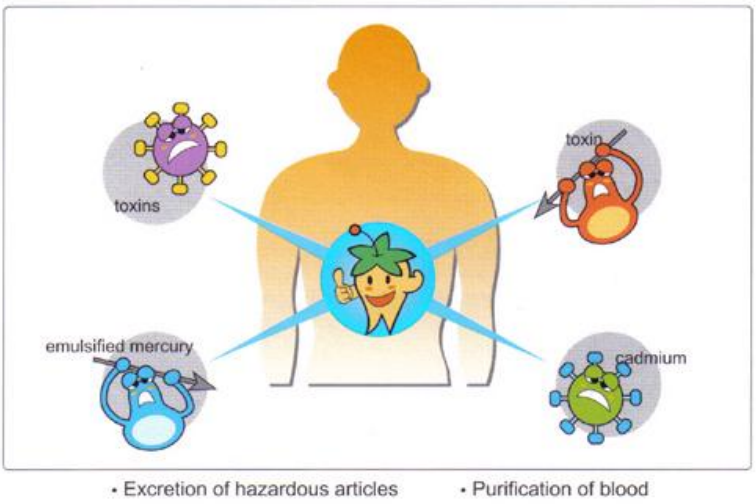


Figure-06: Ginseng and Immunity system.

Antibody production could be regulated by ginseng extract and specific ginsenoside. It has been reported that ginseng extract increases IgM and IgG antibody responses in immunized mice, and ginsenosides Rd, Re and Rg1 also augment specific-antibody responses. Similarly, a novel adjuvant of ginsenoside-based nanoparticles (ginsomes) containing ginsenosides Rb2, Rc, Rb1, and Rd significantly increased the levels of specific IgG_1, IgG_{2a}, IgG_{2b} and IgG_3 in mice.

Recent studies of ginseng also emphasize the adjuvant effects of ginseng on the Th1 and Th2 immune responses as well as antibody responses. In addition to increase in lymphocyte proliferation, ginseng promotes the production of cytokines which stimulate both Th1 and Th2 immune responses. The productions of IFN-γ and IL-5 were increased by administration of ginsenoside Re and Rg1 in mice. Ginsenoside Rd and Re also improved the productions of Th1 and Th2 cytokines including IFN-γ, IL-2, IL-4, IL-10, IL-12, and TNF-α, and consequently, up-regulated Th1 and Th2 responses leading to a balanced immunity. For these reasons, ginseng has been suggested as a potent adjuvant for vaccine. For example, in the vaccine of *T.gondii*, ginseng was regarded as a promising vaccine adjuvant against toxoplasmosis by enhancing antibody response against *T.gondii* antigen. In influenza virus vaccine, ginsenoside Re is expected to improve the quality of vaccine that may activate mixed Th1/Th2 immune responses. Overall, these results indicate that ginseng

functions well as an immunologic adjuvant, and its combination with antigens would bring enhanced immune responses during immunization.[9]

Instruction for using Ginseng: When considering the use of herbal supplements, seek the advice of your doctor. You may also consider consulting a practitioner who is trained in the use of herbal/health supplements. If you choose to use ginseng, use it as directed on the package or as directed by your doctor, pharmacist, or other healthcare provider. Do not use more of this product than is recommended on the label.

- Do not use different formulations of ginseng (such as tablets, liquids, and others) at the same time, unless specifically directed to do so by a health care professional. Using different formulations together increases the risk of an overdose.
- Call your doctor if the condition you are treating with ginseng does not improve, or if it gets worse while using this product.
- If you need surgery or dental work, stop taking ginseng at least 2 weeks ahead of time.
- Store at room temperature away from moisture and heat

Side Effects of Ginseng: Get emergency medical help if you have signs of an allergic reaction: hives; difficulty breathing; swelling of your face, lips, tongue, or throat.

Although not all side effects are known, ginseng is thought to be likely safe for most people, when taken by mouth for a short period of time. Stop using ginseng and call your healthcare provider at once if you have:
severe skin reaction--fever, sore throat, swelling in your face or tongue, burning in your eyes, skin pain, followed by a red or purple skin rash that spreads (especially in the face or upper body) and causes blistering and peeling.

Common side effects may include: 1. diarrhea; 2. insomnia; 3. headache; 4. rapid heartbeat; 5. increased or decreased blood pressure; 6. breast tenderness and vaginal bleeding.

Dose of Ginseng: According to the *Complete German Commission E Monographs*, crude preparations of dried root powder 1 to 2 g can be taken daily for up to 3 months. In numerous clinical trials, the dosage of crude root has ranged from 0.5 to 3 g/day and the dose of extracts has generally ranged from 100 to 800 mg.

In Pregnancy: information regarding safety and efficacy in pregnancy and lactation is lacking.

Figure-7: Some marketed famous Product of Ginseng.

Figure-8: Social distancing for Preventing the Virus.

Others Precautions & tips things during Covid-19 Pandemic

Use Masks: For the general population wearing a mask is only recommended if you are experiencing symptoms, such as a cough or a fever, or if you are caring for someone with these symptoms. Wearing a mask if you have a heart condition is not recommended as this may make breathing more difficult. If you have a heart condition and are concerned about catching COVID-19, discuss this with your doctor. To prevent shortages of face masks it is important to only use them if needed. When wearing a mask, it is important to use and dispose of them in the correct way. The World Health Organization (WHO) has useful information about this. Stay away from Seek People: maintain Social distance.[10]

Maintain your Diet: You need to keep your bodily strength up, but good food also gives you vital vitamins and minerals which help combat anxiety. Whole grains, fruit and vegetables (all the colours) will work away like magic on your anxiety levels and help to reduce them. I know cakes, biscuits and chocolate are delicious, but the extra sugar hit really isn't good for anxiety. A little now and then is a good thing, but in fact eating sweets can make you feel psychologically worse. The same goes for alcohol; keep it to a minimum.[11]

Exercise: Although we all have to keep a safe distance from each other now, this doesn't mean that you can't go out. In fact, going out in the daylight (even if it's cloudy) will be beneficial for your mental health. If you have a garden, walking around the garden, performing gentle (or not so gentle, depending on your ability) aerobic exercises, skipping with a rope, stepping up and down on a low step to music, all these are examples of exercise you can perform which will help alleviate anxiety. If you haven't got a garden, think of a route you can take from your home where you will not have to be in close proximity to others and go for a walk. Every day.[12]

Use virtual methods of socializing: If you are able to Facetime/Skype friends and family do this, even once a day, to the same or a different person each day, to take your mind off your anxiety. Or ring them. It will give you a plan - something to look forward to - and will keep you in touch with your world. Thinking of others, listening to what's happening to them and offering support works surprising well in helping to reduce your own anxiety.

Stay busy with chores: Make a list of things you can do. i.e. Clear out that cupboard, rearrange the room, declutter the wardrobe, weed the garden, etc. You do not have to do everything on the list, and not all at once, but it gives you further plans for you to tackle when you are feeling anxious. The feel-good factor when you have achieved something on your list is priceless.[13]

Figure-9: Maintain your Exercise.

Recreational activity: Listen to music, read a book, tackle crosswords, knit, sew, paint, draw, etc., etc. Any of the things which you enjoy doing but often haven't the time to do. Anything which will either provide an escape from anxious thoughts or will require concentration, will help you.[14]

Avoid excessive negative messaging: Listen to the news, watching the news on TV or phone/laptop just once a day. Whilst we all need to know the latest advice regarding coronavirus and self-isolation, it is seriously anxiety-provoking to have it constantly in our ear. All you need to know will be available in one news-read. Please do not put yourself through more than this daily.[15]

Breathing: This simple exercise really can help when you are feeling anxious. Sit or stand in a relaxed position (tighten and loosen your muscles so that you can feel the difference between a relaxed and tense state). Concentrate on your breath and breathe in deeply to a count of 5 and breath out slowly to a count of 10. Do this several times, until you start to feel the anxiety subside enough for you to do one of the above activities.

Figure-10: Stable your mental health & keep healthy.

CONCLUSION

Ginseng has been widely used as a folk medicine in East Asian countries for thousands of years, mainly as a general tonic and adaptogen to maintain the body's resistance to adverse factors and homeostasis, including improving physical and sexual function, general vitality, and antiaging. Ginseng and ginsenosides seem to be beneficial for immunity, cancer, diabetes, CNS functions, and other conditions. Although a single ginsenoside is demonstrated to be beneficial regarding some effects or conditions, it remains to be determined whether a single component or mixtures of components derived from ginseng can maximize benefit across several diseases and conditions. Therefore, more research works concerning the structure-activity relationship between ginseng constituents, acting individually or synergistically in a mixture, are required for predicting and ensuring physiological and pharmacological efficacy. In addition, as many steps must be taken to standardize the usage of ginseng root through isolating specific ginsenosides, the formulated standardization of ginseng extract and ginsenoside isolation is clearly required to have constant results and desirable efficacy in animal and human experiments. Finally, large-scale, controlled clinical studies are needed to validate the results in terms of their applicability to humans to extend those reported experiments that have been performed using animal models. In this Current Period anyone can use ginseng as a energetic immunobooster with appropriate consult with a medical practitioner/Physician.

REFERENCES

1. Pathogens: Balloux, F., van Dorp, L *BMC Biology* volume, 2017; 15: 91.
2. Douglas D. Richman, Terri Wrin, Susan J. Little, and Christos J. Petropoulos, Rapid evolution of the neutralizing antibody response to HIV type 1 infection, PNAS, 2003; 100(7): 4144–4149.
3. Hongwei Wang; Dacheng Peng; Jingtian Xie. "Ginseng leaf-stem: bioactive constituents and pharmacological functions". Chinese Medicine, 2009; 4(20): 20.
4. Shergis, J. L.; Zhang, A. L.; Zhou, W; Xue, C. C. "Panax ginseng in randomised controlled trials: A systematic review". Phytotherapy Research, 2013; 27(7): 949–65.
5. Jun-Ming Zhang and Jianxiong An, Cytokines, Inflammation and Pain, Int Anesthesiol Clin., 2007; 45(2): 27–37.
6. Cai-Jun Yue 1, Xin Zhou, Jian-Jiang Zhong, Protopanaxadiol 6-hydroxylase and Its Role in Regulating the Ginsenoside Heterogeneity in Panax Notoginseng Cells, Biotechnol Bioeng, 2008; 100(5): 933-40.
7. Park J. D, Kim D. S, Son S. K, editors. et al. Effect of ginseng saponin on modulation of multidrug resistance. Arch Pharm Res., 1996; 19: 213–8.
8. Chen X. C, Chen Y, Zhu Y. G, Fang F, Chen L. M. Protective effect of ginsenoside Rg1 against MPTP-induced apoptosisin mouse substantia nigra neurons. Acta Pharmacol Sin., 2002; 23: 829–34.
9. Takagi K, Saito H, Nabata H. Pharmacological studies of Panax ginseng root: Estimation of pharmacological actions of Panax ginseng root. Jpn J Pharmacol, 1972; 22: 245–9.
10. Christensen L. P. Ginsenosides: Chemistry, biosynthesis, analysis, and potential health effects. Adv Food Nutr Res., 2009; 55: 1–99.
11. Sun J, Hu S, Song X. Adjuvant effects of protopanaxadiol and protopanaxatriol saponins from ginseng roots on the immune responses to ovalbumin in mice. Vaccine, 2007; 25: 1114–20.
12. Wang C. Z, Yuan C. S. Potential role of ginseng in the treatment of colorectal cancer. Am J Chin Med., 36: 1019–28.
13. Friedl R, Moeslinger T, Kopp B, Spieckermann P. G. Stimulation of nitric oxide synthesis by the aqueous extract of Panax ginseng root in RAW 264.7 cells. Br J Pharmacol, 2001; 134: 1663–70.
14. Hasegawa H, Sung J. H, Matsumiya S, Uchiyama M. Main ginseng saponin metabolites formed by intestinal bacteria. Planta Med., 1996; 62: 453–7.
15. Arunava Chandra Chandra, Dr. Dhrubo Jyoti Sen and Dr. Beduin Mahanti; Protein data bank of corona virus→A global pandemic→Stay safe→Stay tuned; World Journal of Pharmaceutical Research, 2020; 9(5): 1971-1994.