MAR Microbiology

Mini Review Article

Monophosphate prodrug analogs of 2'-deoxy-2'-fluoro-2'-C-methylguanosine and CoA-phospho- transferase with effective papaya protease can decrease or remove effects of +ve sense viruses

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Abstract

The proteases of positive-sense single-stranded RNA viruses of the families Picornaviridae, Coronaviridae, and Flaviviridae can act on and counteracting host innate immune responses when is more active than liver and intestine cellular proteases and in the deficiency of AMPK protein synthesis in upper metabolic imp cycles.

Leucine aminopeptidases enzymes considered as a protease that found in liver cells and small intestine that preferentially catalyze the hydrolysis of leucine residues at the N-terminus of peptides and proteins, wherein vivo is necessary for helping to extract leucine and other hydrophobic amino acids from their Primary-mTOR protein, and for catalyzes the hydrolysis of di- and tripeptides and for Sestrins- Leu-1 fast resynthesis, and for stimulating ribosomal ATPase and mitochondrial inner membrane for producing its necessary anti-inflammatory enzymes.

Monophosphate prodrug analogs of 2'-deoxy-2'-fluoro-2'-C-methylguanosine have been reported as potent inhibitors of hepatitis C virus (HCV) RNA-dependent. And the CoA phosphotransferase can increase the removal of C-terminal pro sequences either by proteolysis in pro-mTOR protein and reactivate anti-inflammatory processes through activating mitochondria for expression of its enzymes on inflammations molecules leads to thromboxane-A2 (TXA2) and TNF-a subunits productions, and leads to resynthesis of unusual autoprocessing event at the N terminus for activating FoxO genes for either the production of sestrin-Leu 1 and inactive AMPK protein (sestrin2) and even in the regenerated active protease enzyme.

Using of ATP drugs

(eg remdesivir C27H35N6O8P) can be a useful way to limit and inhibit viral activities but depending on their mol wt whereas the carbon atoms increased in ATP molecules as the risk of increasing of cytotoxicity will occur depending on the percentage of immune efficiency,Where, some ATP molecules are potent (nanomolar range) and reversible inhibitors of P2X3 receptors, without any apparent effect on trigeminal GABA and 5-HT3 receptors.

Materials

_Interferon (IFN-I)

_proteases of positive-sense single-stranded RNA viruses of the families Picornaviridae, Coronaviridae.

_Liver and small intestine proteases

_Ribosomal ATPase.

_Thromboxane-A2

_ (TNF-α) tumor necrosis

Factor-alpha subunits.

_2'-deoxy-2'-fluoro-2'-C-methylguanosine

_CoA phosphotransferase

Background and Methods

The antiviral defense called interferon type I interferon (IFN-I) plays a critical role in the innate immune response against viral infections. They actively participate in antiviral immunity by inducing molecular mechanisms of viral restriction and by limiting the spread of the infection, are normally produced by infected cells originally from ribosomal functions then will follow actin functions to be migrated and delivered across filaments and blood capillaries to neuron cells, that interferon_1 plays a really important role in slowing virus infection through its effective mechanism across filaments and through stimulation to imp effective process as endothelin_1 functions, MPAK pathways functions, and PPARs pathways transcription functions.

Interferon is considered to be the initial primary messages started from the ribosome in the infected cells to follow the indosomal activities and tetraspanins activities, for acting on viral genes (which considered as foreign inflammatory molecules) for producing TXA2 subunits which supposed to reproduce VEGF-A subunits through feedback for re-stimulate G_actin and resynthesis endothelin-1, and reactivate PPARs proliferator genes and MAPK pathways.

Interferon activities are so necessary for sending messages to the brain and reactivate Leu function pathways through activating enkephalin Leu pentapeptides.

Virus invasion triggers host immune responses, in particular, innate immune responses. **(**1**)**.

The proteases of positive-sense single-stranded RNA viruses of the families Picornaviridae, Coronaviridae, and Flaviviridae can act on and counteracting host innate immune responses.

The proteases of +ve sense viruses can act on host cell through binding to cellular molecules including genes leads to altering their sequences arrangement and increasing their +ve mol weight that first will lead cells to start to produce their interferon to neutralize the increase in mol wt and the increasing inactive +ve energy results from viruses.

Leucine aminopeptidase (PA-LAP), which is coexpressed with several known virulence factors and secreted as a proenzyme **(**2**)**.

Leucine aminopeptidase enzymes considered as a protease that found in liver cells and small intestine, and are preferentially catalyzes the hydrolysis of leucine residues at the N-terminus of peptides and proteins, wherein vivo are necessary for extract leucine and other hydrophobic amino acids from their Pro-mTOR. (Primarily mTOR) protein and for catalyzes the hydrolysis of di- and tripeptides and for Sestrins-Leu-1 fast resynthesis, and for stimulating ribosomal ATPase and mitochondrial inner membrane for producing its necessary anti-inflammatory enzymes.

It's necessary to report that the productions of active AMPK protein in vivo can promote FOX genes activities and promote the protease enzymes and their substrates to perform their full activities rather than the protease enzymes will hydrolyze inner cellular genes.

The active removal of C-terminal pro sequences by protease leads to an unusual autoprocessing event at the N terminus in genes, in extracted pro-mTOR protein, and for anti-inflammatory genes and protein production.

Where, the pyrimidine synthesis and leucine synthesis and its extraction from pro-mTOR protein are so necessary for cellular anti-inflammatory cycles and system including sestrin-Leu 1 synthesis and increasing FoxO genes stabilities and activities, that the development of both antagonists and agonists of human PAR2 as potentially disease-modifying therapeutic agents **(**3**)**.

The presence of CoA phosphotransferase can promote AMPK protein synthesis and promote and activities protease activities through helping FOX genes in purifying with catalyzes the Pro-mTOR protein for extracting leucine and hydrophobic amino acids. The presence of CoA phosphotransferase is can act as an antiviral where can catalyzes the genes or viral spherical round shape to a linear long chain for easier catalyzing and extract the necessary amino acids for their cellular metabolic cycles, where can begin by transferring a phosphate group to the sidechain oxygen atom of serine or threonine residues in genes proteins (protein-serine/threonine kinases) that later can be used for rebuilding and reactivating active AMPK protein for sestrin-2 activities and FoxO functions activities and also for ROR alpha genes regulating and promoting mechanism.

Normally, leucine aminopeptidase can be expressed with several known virulence factors and secreted as a proenzyme, and also can be expressed by liver and intestine as proenzyme for receiving Pro-mTOR protein at intestine for previous catalyzing and purify mTOR protein and reactive sestrin-Leu 1 with sestrin2 genes and for fast stimulating ribosomal ATPase with mitochondrial inner membrane OPA1 genes.

The presence of protease with its necessary substrate and with CoA phosphotransferase molecules can increase the removal of C-terminal pro sequences either by proteolysis in pro-mTOR protein leads to the resynthesis of unusual autoprocessing event at the N terminus for either the produced sestrin-Leu 1 and inactive AMPK protein (sestrin2), and even in the regenerated active protease enzyme.

Also, the presence of dephosphocoenzyme-A is promoting retinol pathways and reactivating ROR alpha genes for performing its imp activities for en shoring the Sestrins_Leu 1 synthesis and for promoting the estrogen or androgen hormones activities through promoting their imp cholesterol substrates.

Monophosphate prodrug analogs of 2'-deoxy-2'-fluoro-2'-C-methylguanosine have been reported as potent inhibitors of hepatitis C virus (HCV) RNA-dependent **(**4**)**.in addition presence of fluoro guanosine will mimic thio-blood molecules thio-thromboxane alpha, where it has been reported that the G12 family of G proteins is promoting thromboxane A2 receptor activity **(**5**)**.

GTPase is necessary for reactivate the mTOR purification by FoxO gene's and by the effects of mitochondrial enzymes, and is necessary for reactivate mitochondrial inner membrane through ribosomal ATPase activities for expression of its anti-inflammatory enzymes on inflammations molecules which can include molecules containing high carbon atoms, Where GTPase Ameliorates Glucose-Induced Mitochondrial Dysfunction **(**6**)**.

The use of Monophosphate prodrug analogs of 2'-deoxy-2'-fluoro-2'-C-methylguanosine and CoA phosphotransferase with effective papain protease in the availability of their effective protein substrates and active AMPK protein (According to the diagnostic of the type of infections and immune status) will not increase the risk of cognitive decline due to infections and dementia later in life.

Where the presence of guanine nucleotides can promote the GTPase activities which represent an unusual subgroup of the Ras superfamily and have important mediators of mitochondrial dynamics and for maintaining neuronal health **(**7**)**.

Using of ATP drugs (as Remdesivir : C27H35N6O8P) Can be a useful way to limit and inhibit viral activities but depending on their mol wt whereas the carbon atoms increased in ATP molecules as the risk of increasing of cytotoxicity will occur depending on the percentage of immune efficiency, Where, some ATP molecules are reversible inhibitors of P2X3 receptors, without any apparent effect on trigeminal GABA and 5-HT3 receptors, whose membrane currents were unaffected by the tested compounds **(**8**)** (figure 1,2,3).

Figure 1

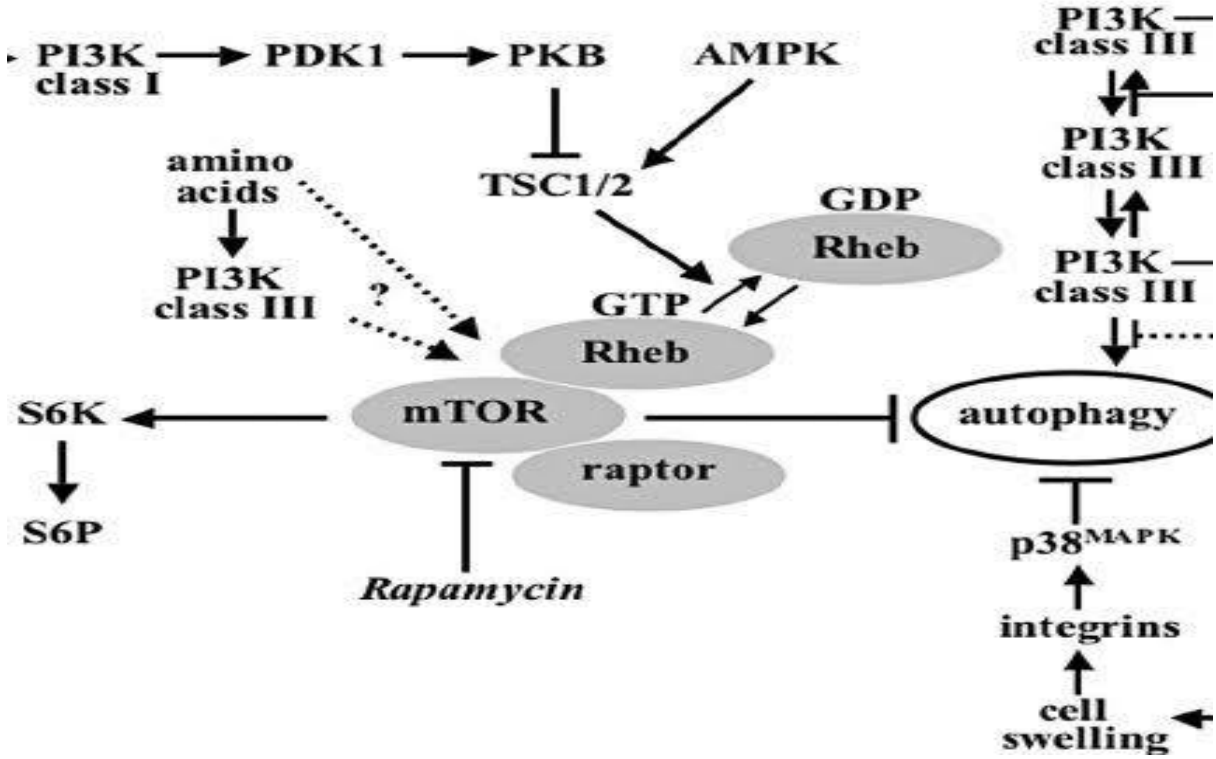

Figure 2

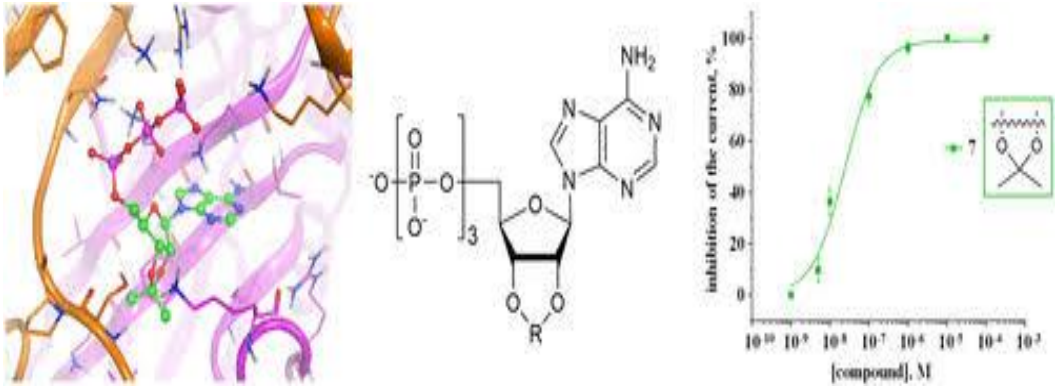

Figure 3

Conclusion

The presence of CoA phosphotransferase can promote AMPK protein synthesis and promote and activities protease activities.

Monophosphate prodrug analogs of 2'-deoxy-2'-fluoro-2'-C-methylguanosine and CoA phosphotransferase with effective papain protease enzyme in the availability of their effective protein substrates and active AMPK protein will limit and inhibit viral activities and will not increase the risk of cognitive decline due to infections and dementia later in life.

Conflict of Interest Statement

The authors declare that the research work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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