Dr. Hymavathi Reddy Vari Ph.D.
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Summary of Present research work

Rhinovirus, which causes self-limiting upper respiratory infections in normal subjects, exacerbates lung disease in patients with chronic lung diseases including chronic obstructive pulmonary disease. Airway epithelial cells are the major target for rhinovirus infection. COPD airway epithelial cells despite having higher than normal interferons responses to rhinovirus, show higher viral load following rhinovirus infection. Viruses subvert intrinsic autophagy and endoplasmic reticulum (ER) stress pathways to promote their replication. My research focus was to examine the how does autophagy influence viral replication. I found that pretreatment with LYN1604, which increases autophagy by increasing LC3β expression promotes rhinovirus replication. Further, I showed that in COPD, autophagy is increased under basal conditions, and now I am examining the hypothesis that COPD cells which already show increased autophagy promotes viral replication.

I worked for core facility

Education

Ph.D., in Biochemistry, Sri Krishnadevaraya University, Anantapur, Andhra Pradesh, INDIA from **2011-2016, Thesis title**: "Biochemical studies on ameliorative effect of Green tea extract on alcohol- induced organ damage in rats**"**
Master of Science (Biochemistry), Sri Krishnadevaraya University, Anantapur, Andhra Pradesh, INDIA from **2005-2007**
Bachelor of Science (Biochemistry, Microbiology and Chemistry) from **2002-2005**
Lecturer for Graduate Students and Handled practical Labs in PVKK college, Anantapur, Andhra Pradesh, INDIA from **2008-2011**

***Fields of interest*:**

Immunology, Molecular biology, Phytomedicine, Clinical biochemistry and Cancer biology, virology, bacteriology

Technical Expertise:

Handling small rodents, Tissue processing, embedding and sectioning, tissue staining and immunohistochemistry, cell culture, transient transfection of cells, Calcium phosphate transfection, infection, virus stock preparation, viral amplification, Viral titer, virus purification. Western blot, Sea-horse experiment, Mitochondrial isolation, Mitochondrial swelling assay, isolation of RNA, cDNA synthesis, qPCR, flow cytometry, immunoprecipitation, MTT assay, ATP assay, ELISA. Plasmid isolation, CsCl ultracentrifugation, gradient ultracentrifugation.

CRISPR technology, Making single clone cells

GOOGLE SCHOLAR Link:

https://scholar.google.com/citations?user=QmH9eSUAAAAJ&hl=en

Research Publications:

1. Xander, N., **Vari, H. R**., Eskandar, R., Li, W., Bolla, S., Marchetti, N., & Sajjan, U. S. (**2019)**. Rhinovirus-Induced SIRT-1 via TLR2 Regulates Subsequent Type I and Type III IFN Responses in Airway Epithelial Cells. *The Journal of Immunology*, *203*(9), 2508-2519.
2. Gimenes-Junior, J., Owuar, N., **Vari, H. R**., Li, W., Xander, N., Kotnala, S., & Sajjan, U. S. (**2019**). FOXO3a regulates rhinovirus-induced innate immune responses in airway epithelial cells. *Scientific Reports*, *9*(1), 1-14.

3. Joao A Gimenes, Vikram Srivastava, **Hymavathi ReddyVari**, Sudhir Kotnala, Rahul Mishra, Mohamed Farazuddin, Wuyan Li, Umadevi S Sajjan (2019). Rhinovirus-induces progression of lung disease in a mouse model of COPD via IL-33/ST2 signaling axis. Clinical Science 133 (8), 983-996.

4. **Reddyvari, H**., Govatati, S., Matha, S. K., Korla, S. V., Malempati, S., Pasupuleti, S. R & Nallanchakravarthula, V. **(2017**). Therapeutic effect of green tea extract on alcohol induced hepatic mitochondrial DNA damage in albino wistar rats. *Journal of advanced research*, 8(3), 289-295.

5. **Reddyvari, H.,** Bulle, S., Vaddi, D. R., & Cha, V. N. **(2016**). Ameliorative effect of green tea extract on alcohol induced renal damage in rats. IJABPT

6. Bulle, S., **Reddyvari, H**., Nallanchakravarthula, V., & Vaddi, D. R. **(2016**). Therapeutic potential of Pterocarpus santalinus L.: An update. *Pharmacognosy reviews*, 10(19), 43.

7. Bulle, S., **Reddyvari, H**., Vaddi, D. R., Pannuru, P., & NCh, V. **(2015**). Therapeutic potential of P. santalinus against alcohol-induced histo-pathological changes and

oxidative damage in heart and lungs. *International Journal of Research in Pharmaceutical Sciences*, 6(4), 305-311.

8. Reddy, V. D., Padmavathi, P., **Hymavathi, R**., Maturu, P., & Varadacharyulu, N. C. (**2014**). Alcohol-induced oxidative stress in rat liver microsomes: Protective effect of Emblica officinalis. *Pathophysiology*, *21*(2), 153-159.

9. Padmavathi, P., Reddy, V. D., Swarnalatha, K., **Hymavathi, R.,** & Varadacharyulu, N. C. (**2015**). Influence of altered hormonal status on platelet 5-HT and MAO-B activity in cigarette smokers. *Indian Journal of Clinical Biochemistry*, 30(2), 204-209.

10. Abbavaram, B. R. A., & **Reddyvari, H. R. (2013**). Synthesis, characterization and antimicrobial activity of bifunctional sulfonamide-amide derivatives. *Journal of the Korean Chemical Society*, 57(6), 731-737.

11. Babul Reddy, A., **Hymavathi, R. V**., & Narayana Swamy, G. (**2014**). Synthesis, Characterization, and Antimicrobial Screening of Ethylene-Spaced Bis-heterocycles. *Journal of Heterocyclic Chemistry*, 51(4), 1119-1123.

12. Babulreddy, A., **Hymavathi, R. V.**, Hussain, M., & Narayana Swamy, G. (**2013)**. Synthesis, Characterization, and In Vitro Antimicrobial Activity of Methyleneamine-Linked Bis-heterocycles. *Journal of Heterocyclic Chemistry*, 50(3), 727-733.

13. Reddy, A. B., **Hymavathi, R. V.**, & Swamy, G. N. (**2013**). A new class of multi-substituted oxazole derivatives: Synthesis and antimicrobial activity. *Journal of Chemical Sciences*, 125(3), 495-509.

14. A. Babulreddy**, R.V. Hymavathi**. (**2012**) "Synthesis and Biological Screening of new Pteridine derivatives as Potential Antibacterial and Antifungal Compounds". *J. Pharm. Res.* Vol. 5, No. 4, p 1841-1845. **ISSN:** 0974-6943.

15. A. Babulreddy**, R.V.Hymavathi**, G. Narayanaswamy, (**2012**). "1-(4-(4-(2-(methylamino) pyrimidin-4-yl)pyridin-2-yl)phenyl)-3-substituted urea derivatives by using sequential Suzuki-Miyaura cross-coupling reactions: Synthesis, Characterization and Antimicrobial activity" *Int. Res. J. Pharm.* Vol. 3: (10), 139-142.

16. A. Babulreddy**, R.V. Hymavathi** and T. Bhirava Prathap Reddy (**2012**) "Synthesis, Characterization and Antimicrobial Screening of new class of 1-substituted-*N*-(1,2,3,4-tetrahydronaphthalen-1-yl)-1*H*-benzo[*d*][1,2,3]triazole-5-caboxamide derivatives" *Hetercyclic. Lett.* Vol. 2: (3), 253-261. **ISSN:** 2231 – 3087(print) / 2230 – 9632

17. Reddy, A. B., Hymavathi, A., Kumar, L. V., Penchalaiah, N., Naik, P. J., Karunasree, M., & Swamy, G. N. **(2010).** Stereoselective synthesis and antimicrobial activity of congested Epoxysulphones. Der Pharma Chemica, 2(5), 438-445.

18. A. Babul Reddy**, R.V. Hymavathi**, T. Chandrasekhar, M. Naveen, G. Narayana Swamy. (**2011**). "Synthesis and Antimicrobial Activity of a new class of methyleneamine-linked *bis*-heterocycles" *J. Heterocyclic Chem.* Vol. 48, No. 5, p, 1175–1180, ISSN: 1943-5193, DOI: 10.1002/jhet.638.

19. Reddy, A. B., Hymavathi, A., Kumar, L. V., Penchalaiah, N., Naik, P. J., Naveen, M., & Swamy, G. N. (**2011**). Synthesis and Biological Evaluation of Diastereomeric (E and Z) Sulfides, Sulfones, Sulfide-Sulfones, and Disulfones. *Phosphorus, Sulfur, and Silicon and the Related Elements*, *186*(8), 1721-1732.

20. A. Babulreddy, **Hymavathi R**, Bhirava Prathap Reddy. (**2011)** "Regioselective ring opening of highly congested epoxy sulphones with thiols in water: Synthesis, characterizationa and antimicrobial activity" *Int. J. Res. Org. Chem*. Vol. 1, No.1, p, 1-5,). **ISSN**: 2278-1382.

21. Reddy, A. B., **Hymavathi, R. V**., Chandrasekhar, T., Naveen, M., & Swamy, G. N. **(2011**). Synthesis and antimicrobial activity of a new class of methyleneamine-linked bis-heterocycles. *Journal of Heterocyclic Chemistry*, 48(5), 1175-1180.

22. Babul Reddy, A., **Hymavathi, R. V**., & Narayana Swamy, G. (**2014**). Synthesis, Characterization, and Antimicrobial Screening of Ethylene-Spaced Bisheterocycles. *Journal of Heterocyclic Chemistry*, 51(4), 1119-1123.

Conferences and seminars (International/ National):

1. Presented poster in national seminar on trends for advancement of sericulture held on 21-22 at S.K. University, Anantapur
2. Participated in national symposium on Prospects and potentials in medical and aromatic plants held on 19-12-2015
3. Presented poster in 83rd Annual Meeting of the SBC, India-2014 from 17-12-14 to 21-12-2014, held at KIIT University, Bhubaneswar.
4. Presented poster in 82nd Annual Meeting of the SBC, India-2013 from 2-12-13 to 5-12-2013, held at University of Hyderabad, Hyderabad-500046.
5. Participated in International conference on "Environmental impact on human health and therapeutic challenges" during 20-22 Dec. 2012, held at S.V. University, Tirupati, Andhra Pradesh.
6. Participated in 77th Annual meeting of the SBC, India, held on 18-20-2008, IIT, Madras, Chennai-600 036.

Summary of Ph.D work

Alcohol consumption is a global phenomenon and a serious health issue as it is the resultant of multi organ diseases and toxicity. Research on alcohol for the past few decades revealed mechanisms of alcohol related diseases and damage, which include ethanol metabolism linked oxidative stress, depletion of antioxidant status, impaired nitric oxide (NO) metabolism leading to excessive production of NO and related free radicals, gut derived endotoxin release, involvement of TNFα, changes in redox state, mitochondrial damage and changes in immune system with decreased ATP production. Green tea provides an excellent opportunity by serving as dietary constituent as it is a popular beverage with multi targeted phyto-constituents, in particular its catechins with proven anticancer, hepatoprotective antioxidant and other beneficial properties.

The beneficial effects of green tea are attributable to green tea catechin flavonoids (polyphenols) and caffeine. After ingestion catechins are degraded by enzymes and colonic microflora, consequently produced metabolites by the action of phase II enzymes in small intestine and liver undergo methylation, glucolyation and sulfonylation, facilitating their

movements and absorption *via* passive diffusion and excretion making use of enterohepatic circulation. Catechins up-regulate lipid metabolizing enzymes *via* nuclear transcription factor kB (NFkB) thereby stimulating fat oxidation). Tea catechins block activation of NF-kB by inhibiting the phosphorylation of inhibitor of kB (IkB) preventing NF-kB from inhibiting the peroxisome proliferator activated receptors (PPARS) which is important transcription factors of lipid metabolism. This leads to activation of β-oxidation of fatty acids resulting in increased fat mobilization and removal as a consequence of increased mRNA expression of lipid metabolizing enzymes such as acyl CoA oxidase and medium chain acyl CoA oxidase, a peroxysomal beta oxidation enzyme and medium chain acyl Co-A dehydrogenase (MCAD), a mitochondrial enzyme, in liver. Hence, the present study aims at therapeutic effect of aqueous green tea extract (AGTE) against alcohol induced broad spectrum of biochemical events, and mechanisms associated in rats