

## **Hum Nath Jnawali (Ph.D)**

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### **EDUCATION**

- PhD:**           **Biochemistry**  
2011           Department of Life Science and Biochemical Engineering, Sun Moon University, South Korea.  
**Thesis title:** Production of clavulanic acid through metabolic doctoring and its biosynthesis in *Streptomyces clavuligerus* NRRL3585.
- Master:**       **Chemistry**  
2002           Central Department of Chemistry, Tribhuvan University, Nepal.
- Bachelor:**     **Chemistry**  
2000           Amrit Science College, Tribhuvan University, Nepal.

### **RESEARCH EXPERIENCES**

1. **Research Professor** (2013-present) Konkuk University, Seoul, South Korea
2. **Postdoctoral fellow** (2011-2013) Korean Institute of Tuberculosis, Chungbuk, South Korea
3. **Research Assistant** (2006-2011) Department of Life Science and Biochemical Engineering, **Sun Moon University**, South Korea.
4. **Chemistry Lecturer** (2005-2006) **Kathmandu University**, Dhulikhel, Nepal
5. **Chemistry Lecturer** (2003-2005) **Bal Deeksha Sadan College**, Lalitpur, Nepal
6. **Chemistry Lecturer** (2003-2005) **Nagarjuna International College**, Lalitpur, Nepal

### **SCHOLARSHIPS AND AWARDS**

- **Full Studentship from Graduate School of Sun Moon University, South Korea.**

### **EXPERTISE**

- **Genetic Engineering Techniques**  
Isolation, characterization and identification of microbes from different samples, Isolation of chromosomal DNA, plasmid DNA, PCR, 16S rDNA amplification, Isolation of mRNA, RT-PCR, Construction of genomic library, Construction of mutants, Southern blot hybridization, Western blot
- **Bioinformatics analysis, Homology modeling and docking**
- **Cell culture technique**  
Cell Culture; Cell signaling, Cell Count, MIP assay, TNF- $\alpha$  assay, NO assay, MTT assay, ELISA etc
- **Protein expression and purification (FPLC) in prokaryotic and eukaryotic system**

- **Isolation and purification of natural products:**  
TLC (Thin Layer Chromatography), Preparative TLC, HPLC, preparative HPLC, LC/MS/MS
- **Isolation of Mycobacterium, drug susceptible test, genomic DNA isolation and transformation in *Mycobacterium***

## PUBLICATIONS

### International Journals (SCI)

1. **Hum Nath Jnawali**, Dasom Jeon, Young-Gun Park, Eunjung Lee, Yong-Seok Heo, Yangmee Kim. **2015**. Rhamnetin Is a Potent Inhibitor of Extracellular Signal-regulated Kinase 1 and c-Jun N-Terminal Kinase 1. *Bulletin of the Korean Chemical Society* **36**, 2107-2110.
2. **Hum Nath Jnawali**, Young-Guen Park, Dasom Jeon, Eunjung Lee, Yangmee Kim. **2015**. Anti-Inflammatory Activities of Biapigenin Mediated by Actions on p38 MAPK Pathway. *Bulletin of the Korean Chemical Society* **36**, 2325-2329.
3. **Hum Nath Jnawali**, Eunjung Lee, Ki-Woong Jeong, Yong-Seok Heo, and Yangmee Kim. **2014**. Anti-inflammatory activity of rhamnetin and a model of its binding to c-Jun NH<sub>2</sub>-terminal kinase 1 and p38 MAPK. *Journal of Natural Products* **77**, 258-263.
4. Eunjung Lee, Areum Shin, Ki-Woong Jeong, Bongwhan Jin, **Hum Nath Jnawali**, Soyoung Shin, Song Yub Shin, Yangmee Kim. **2014**. Role of phenylalanine and valine<sup>10</sup> residues in the antimicrobial activity and cytotoxicity of piscidin-1. *PLoS One* **9**:e114453.
5. **Hum Nath Jnawali**, Eunjung Lee, Areum Shin, Young Guen Park, and Yangmee Kim. **2014**. Effect of quercetin in the UV-irradiated human keratinocyte HaCaT cells and A model of its binding to p38 MAPK. *Bulletin of the Korean Chemical Society* **35**, 2787-2790.
6. Eunjung Lee, Ki-Woong Jeong, **Hum Nath Jnawali**, Areum Shin, Yong-Seok Heo and Yangmee Kim. **2014**. Cytotoxic activity of 3,6-dihydroxyflavone in human cervical cancer cells and its therapeutic effect on c-Jun N-terminal kinase inhibition. *Molecules* **19**, 13200-13211.
7. **Hum Nath Jnawali**, Eunjung Lee, Ki-Woong Jeong, Yong-Seok Heo, and Yangmee Kim. **2013**. Binding model of fisetin and human c-Jun NH<sub>2</sub>-terminal kinase 1 and its anti-inflammatory activity. *Bulletin of the Korean Chemical Society* **34**, 2629-2635.
  8. Eunjung Lee, Ki-Woong Jeong, Areum Shin, Bonghwan Jin, **Hum Nath Jnawali**, Bong-Hyun Jun, Jee-Young Lee, Yong-Seok Heo<sup>3</sup> & Yangmee Kim. **2013**. Binding model for eriodictyol to Jun-N terminal kinase and its anti-inflammatory signaling pathway. *BMB Reports* **46**, 594-599.
9. **Hum Nath Jnawali**, Sung Chul Hwang, Young Kil Park, Hyejin Kim, Yeon Seon Lee, Gyung Tae Chung, Kang Hyeon Choe, Sungweon Ryoo. **2013**. Characterization of mutations in multi and extensive-drug resistance among strains of *Mycobacterium tuberculosis* clinical isolates in Republic of Korea. *Diagnostic microbiology and infectious disease* **76**, 187-196.

10. **Hum Nath Jnawali**, Heekyung Yoo, Sungweon Ryoo, Kwang-Jun Lee, Bum-Joon Kim, Won-Jung Koh, Chang-Ki Kim, Hee-Jin Kim, Young Kil Park. **2013**. Molecular genetics of *Mycobacterium tuberculosis* resistant to aminoglycosides and cyclic peptide capreomycin antibiotics in Korea. *World Journal of Microbiology and Biotechnology* **29**, 975-982.
11. Young Kil Park, Sung Weon Ryoo, Seung Heon Lee, **Hum Nath Jnawali**, Chang-Ki Kim, Hee Jin Kim, and Sang Jae Kim. **2012**. Correlation of the phenotypic ethambutol susceptibility of *Mycobacterium tuberculosis* with *embB* gene mutations in Korea. *Journal of Medical Microbiology*. **61**, 529-534.
12. **Hum Nath Jnawali**, Jin Cheol Yoo, Jae Kyung Sohng. **2011**. Improvement of clavulanic acid production in *Streptomyces clavuligerus* by genetic manipulation of structural biosynthesis genes. *Biotechnology Letter*. **33**, 1221-1226.
13. Bashistha Kumar Kanth, **Hum Nath Jnawali**, Narayan Prasad Niraula, Jae Kyung Sohng. **2010**. Superoxide dismutase (SOD) genes in *Streptomyces peucetius*: Effects of SODs on secondary metabolites production. *Microbiological Research*. **166**, 391-402.
14. **Hum Nath Jnawali**, Hei Chan Lee, Jae Kyung Sohng. **2010**. Enhancement of Clavulanic Acid Production by Expressing Regulatory Genes in gap Gene Deletion Mutant of *Streptomyces clavuligerus* NRRL3585. *Journal of Microbiology and Biotechnology*. **20**, 146-152.
15. **Hum Nath Jnawali**, Kwangkyoung Liou, Jae Kyung Sohng. **2010**. Role of  $\sigma$ -factor (*orf21*) in clavulanic acid production in *Streptomyces clavuligerus* NRRL3585. *Microbiological Research*. **166**, 369-379.
16. **Hum Nath Jnawali**, Bimala Subba, Jae Kyung Sohng. **2009**. Functional characterization of *kanB* by complementing in engineered *Streptomyces fradiae*  $\Delta$ neo6::tsr. *Biotechnology Letter*. **31**, 869-875
17. **Hum Nath Jnawali**, Tae-Jin Oh, Kwangkyoung Liou, Byoung Chul Park, Jae Kyung Sohng. **2008**. A two-component regulatory system involved in clavulanic acid production. *Journal of Antibiotics*. **61**, 651-659.

## **Book**

**Book title: "Tuberculosis", ISBN 980-953-307-872-9.**

1. **Hum Nath Jnawali**, Sungweon Ryoo. **2013**. **Chapter title:** First- and second-line drugs and drug resistance. Intech open science.

## **Research Paper Publication (non-SCI)**

1. **Hum Nath Jnawali** and Young Kil Park. (2012) Tuberculosis overview and drug resistance. *Sonsik Journal. (Review)* **3**, 32-37.
2. **Hum Nath Jnawali**, Kwangkyoung Liou, Jae Kyung Sohng. (2009) Construction and expression of recombinant plasmid for the production of clavaminic acid in *Streptomyces lividans* TK24. *Journal of Biomolecule Reconstruction*. **6**, 131-139.
3. **Hum Nath Jnawali**, Narayan Prasad Niraula, Kwangkyoung Liou, Jae Kyung Sohng. (2009). Cloning and expression of cytochromeP450 (*orf20*) from clavulanic acid producing strain *Streptomyces clavuligerus* NRRL 3585. *Journal of Biomolecule Reconstruction*. **6**, 48-53.

4. **Hum Nath Jnawali**, Jae Kyung Sohng. (2008). Clavulanic acid biosynthetic pathway, fermentative production and stability. *Journal of Biomolecule Reconstruction*. **5**, 107-120.
5. **Hum Nath Jnawali**, Hei Chan Lee, Jae Kyung Sohng. (2008). Enhancement of clavulanic acid production by the deletion of glyceraldehydes-3-phosphate dehydrogenase gene from *Streptomyces clavuligerus* NRRL3585. *Journal of Biomolecule Reconstruction*. **5**, 17-26.
6. **Hum Nath Jnawali**, Tae-Jin Oh, Hei Chan Lee, Kwangkyoung Liou, Jae Kyung Sohng. (2006). Aminotransferase genes from 2-deoxystreptamine-containing aminoglycosides. *Journal of Biomolecule Reconstruction*. **3**, 165-172.

### **Conferences:**

1. **Hum Nath Jnawali**, Eunjung Lee, Dasom Jeon, Areum Shin, Sungwon Ryu, In Duk Jung, Yeong-Min Park, Yangmee Kim. Anti-Tuberculosis and Anti-inflammatory Activity of a Naturally Occurring Flavonoid, Isorhamnetin. 2015 Summer Workshop. Hotel Tirol, Muju Deogyusan Resort, August 24-26, **2015**, South Korea, Poster No.-PS10 (**Poster**).
2. Korean society of mass spectrometry, Annual meeting, August 23-24, 2012 Swiss Rosen Hotel, Gyeongju, South Korea.
3. **Hum Nath Jnawali**, Sungweon Ryoo, Young Kil Park. Molecular genetics of aminoglycosides antibiotics resistance in clinical isolates in Korea. 112th Annual Meeting of Korean Academy of Tuberculosis and Respiratory Diseases, November 10-11, 2011 · Lotte Hotel World, Seoul, South Korea, Poster No.-66 (**Poster**).
4. **Hum Nath Jnawali**, Heekyung Yu, Yoonsung Park, Kyungho Lee, Young Kil Park, Hyejin Kim and Sungweon Ryoo. Characterization of mutations in multi and extensive-drug resistance strains of *Mycobacterium tuberculosis* clinical isolates in Republic of Korea. 112th Annual Meeting of Korean Academy of Tuberculosis and Respiratory Diseases, November 10-11, 2011. Lotte Hotel World, Seoul, South Korea, Poster No.-69 (**Poster**).
5. **Hum Nath Jnawali**, Hei Chan Lee, Kwangkyoung Liou, Jae Kyung Sohng. 2010. Enhancement of clavulanic acid production by integration and expression of structural biosynthesis genes in *Streptomyces clavuligerus* NRRL3585. 2010 KSBB spring meeting and international symposium "Biotechnology for Human and Nature". Kyungwon University, Seoul, South Korea April 15-16 (**Oral**).
6. **Hum Nath Jnawali**, Jae Kyung Sohng. 2010. Heterologous production of clavaminic acid from *Streptomyces lividans* TK24. 2010 Symposium of the Korean Society for Actinomycetes Research organized by the Korean Society for Actinomycetes Research. Rivertel, Youngwol, South Korea, August 13 (**Oral**).
7. **Hum Nath Jnawali**, Tae-Jin Oh, Kwangkyoung Liou, Jae Kyung Sohng. 2010. Heterologous production of clavaminic acid from *Streptomyces lividans* TK24. 5th Japan-Korea Chemical Biology Symposium, the Westin Chosun Hotel, Busan, South Korea, January 26-28 (**Poster**).
8. **Hum Nath Jnawali**, Kwangkyoung Liou, Jae Kyung Sohng. 2009. Effect of *orf21* ( $\sigma$ -factor) on clavulanic acid production in *Streptomyces clavuligerus* NRRL3585. The Korean Society for Biotechnology and Bioengineering Fall Meeting and International Symposium, Daejeon Convention Center, South Korea, November 2-3 (**Poster**).

9. **Hum Nath Jnawali**, Jae Kyung Sohng. 2009. Disruption of *orf26* gene and its effect on 5S clavam production in *Streptomyces clavuligerus* NRRL3585. 50<sup>th</sup> Anniversary International Symposium on Microbiology organized by the Microbiology Society of Korea. Jeju National University, Jeju Island, South Korea May 28-30 (**Poster**).
10. **Hum Nath Jnawali**, Trinh Viet Hung, Jae Kyung Sohng. 2007. Sequence analysis and functional characterization of downstream region of the clavulanic acid gene cluster from *Streptomyces clavuligerus*. 36<sup>th</sup> KSIEC (The Korean Society of Industrial and Engineering Chemistry) Meeting. Hankyong National University, Anseong, South Korea, November 2-3 (**Poster**).