

## WALIMUNI NAYOMI DESHANI DE SILVA

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- Date of Birth : 28-01-1994
  - Nationality : Sri Lankan
  - Civil Status : Married

### **Academic qualification**

- **PhD in Biochemistry**

Title: Nanoencapsulation and bioactivities of herbal extracts with potential antidiabetic effects from selected Sri Lankan flora

- **Higher Education (2015 – 2018)**

B.Sc. Special Degree in Chemistry (Hons), University of Peradeniya

### **Profession**

- Lecturer, Department of Biochemistry, Faculty of Medicine, University of Ruhuna (January 2021 – to date)

### **Teaching experience**

- Teaching assistant in Chemistry, Department of Limnology and Water Technology, Faculty of Fisheries and Marine Sciences and Technology, University of Ruhuna (January 2020 – August 2020).
- Teaching assistant in Chemistry, Department of Chemistry, Faculty of Science, University of Ruhuna (January 2019 – December 2019).

### **Short courses/workshops followed**

- Participated in a workshop on Florescence Microscopy (FluoMicro@ICGEB) at International Center of Genetic Engineering and Biotechnology (ICGEB), New Delhi, India, 2025
- Training on Counseling the Undergraduate conducted by the Medical Education and Staff Development Unit, Faculty of Medicine, University of Ruhuna, 2025

- Participated in a workshop on Good Clinical Practice organized by the Forum for Ethics Review Committees in Sri Lanka, 2023
- Workshop on Molecular Docking jointly organized by the Society for Alternatives to Animal Testing in Sri Lanka and Center for Diagnosis, Therapeutics and Transitional Research in Genetic Disorders, University of Sri Jayewardenepura, 2023
- Certificate course in Laboratory Animal Science organized by Sri Lanka association for Laboratory Animal Sciences in collaboration with the Medical Research Institute, Sri Lanka, 2022
- Certificate course in Professional Development in Higher Education conducted by the Staff Development Center, University of Ruhuna, 2022
- Short course on Applied Statistics and Research Methodology conducted by Institute of Mathematics and Management Sri Lanka and Australia, 2022
- Training on Counseling the Undergraduate conducted by the Medical Education and Staff Development Unit, Faculty of Medicine, University of Ruhuna, 2022

### **Research Experience**

- PhD research (2020 – 2025) - Nanoencapsulation and bioactivities of herbal extracts with potential antidiabetic effects from selected Sri Lankan flora
- Bioactivity studies of herbal extracts encapsulated nanoparticles (*In vitro* and *In vivo* studies)
- Phase I clinical trial of a new herbal drug for non-alcoholic fatty liver disease
- Undergraduate research project (2018) - Evaluation of one of the causative factors for CKDu: Analysis of effect of glyphosate on surface water quality
- Instruments used: COD Analyzer, Ion chromatography, Inductive Coupled Plasma Atomic Emission Spectrometers (ICP-AES), Fluoride ion selective electrode, Atomic Absorption Spectrometer (AAS), SEM, FTIR spectrophotometer
- Supervision of undergraduate research students

### **Research Awards**

1. Vice chancellor's Gold Medal - 2025 for the excellent performance during the postgraduate study in generating knowledge that has accepted internationally, University of Ruhuna, Sri Lanka
2. General Research Committee post graduate award (Merit) - 2025, Sri Lanka Association for the Association of Advancement of Science (SLAAS), Sri Lanka.
3. Award for the best poster presentation, 5<sup>th</sup> CBSL Conference, College of Biochemists in Sri Lanka, 2025

4. Award for the best oral presentation, 21<sup>st</sup> Academic Sessions, University of Ruhuna, 2024.
5. Second place in oral presentation, 4<sup>th</sup> CBSL Conference, College of Biochemists in Sri Lanka, 2023
6. Award for the best oral presentation, Faculty of Medicine Academic Sessions 2023, Galle, Sri Lanka
7. Award for the best oral presentation, 20<sup>th</sup> Academic Sessions, University of Ruhuna, 2023
8. Award for the best oral presentation, International Research Symposium of the Faculty of Allied Health Sciences. University of Ruhuna, Galle, Sri Lanka, 2023
9. Award for the best oral presentation, 19<sup>th</sup> Academic Sessions, University of Ruhuna, 2022
10. Award for the best oral presentation, 3<sup>rd</sup> CBSL Conference, College of Biochemists in Sri Lanka, 2021
11. Merit award for the best poster presentation, Faculty of Medicine Academic Sessions 2020, Galle, Sri Lanka

### **Research grants**

1. Faculty Research Fund 2022, Faculty of Medicine, University of Ruhuna Sri Lanka for the research project titled “Screening of selected three herbs and development of its alginate nanoformulation for the treatment of inflammatory diseases”
2. Faculty Research Fund 2023, Faculty of Medicine, University of Ruhuna Sri Lanka for the research project titled “Safety assessment of a herbal capsule *Asparagus falcatus* L. in healthy subjects: Phase I clinical trial of a new herbal drug for non-alcoholic fatty liver disease”
3. Faculty Research Fund 2025, Faculty of Medicine, University of Ruhuna Sri Lanka for the research project titled “Screening of selected medicinal plants and development of their alginate nanoformulation for the treatment of diabetes mellitus”.

### **Publications**

#### **Published manuscript in SCI/SCI expanded journals**

1. **De Silva, W.N.D.**, Attanayake, A.P., Arawwawala, L.D.A.M., Karunaratne, D.N., Pamunuwa, K.M.G.K. (2023). *In vitro* antioxidant activity of alginate nanoparticles encapsulating the aqueous extract of *Coccinia grandis* L. *Turkish Journal of Chemistry*. 47(4). 715-725.

2. **De Silva, N.D.**, Attanayake, A.P., Karunaratne, D.N., Arawwawala, L.D.A.M. and Pamunuwa, G.K., (2023). Bael (*Aegle marmelos* L. Correa) fruit extracts encapsulated alginate nanoparticles as a potential dietary supplement with improved bioactivities. *Journal of Food Science*. 2023. 1-20.
3. Dananjaya, S.H.S., Madushani, K.G.P., Dilrukshi, J., **De Silva, N.D.**, Sandamalika, W.G., Kim, D., Choi, D., De Zoysa, M. and Attanayake, A.P., (2023). Development and characterization of polydeoxyribonucleotide (PDRN) loaded chitosan polyplex: *In vitro* and *in vivo* evaluation of wound healing activity. *International Journal of Biological Macromolecules*, 253. 126729.
4. **De Silva, N.D.**, Attanayake, A.P., Karunaratne, D.N., Arawwawala, L.D.A.M. and Pamunuwa, G.K., (2024). Synthesis and bioactivity assessment of *Coccinia grandis* L. extract encapsulated alginate nanoparticles as an antidiabetic drug lead. *Journal of Microencapsulation*. 41(1). 1-17.
5. Wasana, K.G.P., **Silva, N.D.D.**, Attanayake, A.P., Weerathna, T.P., (2024). Association of hypertriglyceridemic waist phenotype with metabolic syndrome traits and its diagnostic potential to predict metabolic syndrome in adults with excess body weight: A community-based cross-sectional study. *Journal of Human Nutrition and Dietetics*, 37(4). 1130-1140.
6. Wasana, K.G.P., **De Silva, N.D.**, Attanayake, A.P., Weerathna, T.P., Wadasinghe, R.R., (2025). Comparison of lipid, liver, and renal parameters between fasting and non-fasting states in apparently healthy adults. *Turkish Journal of Biochemistry*, 1-10.
7. **De Silva, N.D.**, Attanayake, A.P., Arawwawala, L.D.A.M., (2025). Nanoencapsulated aqueous extract of *Catharanthus roseus* L. improves the biological activities *in vitro*. *ChemistrySelect*, e00697. (1-15).
8. **De Silva, N.D.**, Attanayake, A.P., Arawwawala, L.D.A.M., Karunaratne, D.N., Pamunuwa, G.K., (2025). Alginate Nanocarrier Loading *Catharanthus roseus* L. Extracts: An Emergent Formulating Approach to Enhance Antidiabetic and Anti-inflammatory Activities. *Chemistry and Biodiversity*. 22(12), e00320.
9. Katipearachchi, S., Faizan, M., Kalansuriya, P., Attanayake, A.P., **De Silva, N.D.**, (2025). Molecular docking and *in vitro* assessment of *Gymnema sylvestre* R. Br. and *Trigonella foenum-graceum* L. phytochemicals as dual  $\alpha$ -amylase and  $\alpha$ -glucosidase inhibitors. *Chemistry and Biodiversity*. 22(12), p.e01525.

### **Published book chapters**

1. **De Silva, N.D.**, Wasana, K.G.P., Attanayake, A.P., 2024. Cinnamon Bark (Cinnamomum Species). In Medicinal Spice and Condiment Crops (pp. 180-199). CRC Press.
2. **De Silva, N.D.**, Wasana, K.G.P., Attanayake, A.P., 2024. Antimalarial Response, Traditional and Other Potential Uses of Momordica Genera. In Antimalarial Medicinal Plants (pp. 221-236). CRC Press.
3. Wasana, K.G.P., **De Silva, N.D.**, Attanayake, A.P., Nutritional and Chemical Values of Spices and Condiment Plant Species. In Medicinal Spice and Condiment Crops (pp. 84-97). CRC Press.
4. **De Silva, N.D.**, Wasana, K.G.P., Attanayake, A.P. and Dananjaya, S.H.S., 2025. Chitosan nanoparticle-mediated approaches for wound healing. In Recent Advances in Nanomedicines Mediated Wound Healing (pp. 207-226). Elsevier, Academic Press
5. Wadasinghe, R.R., **De Silva, N.D.**, Attanayake, A.P., and Wasana, K.G.P., (2025) Plant molecules: Prevention and management of diabetes mellitus. Elsevier, Academic Press

### **Published abstracts in national/international conferences**

1. **De Silva, W.N.D.**, Navaratne, A.N., (2019). Effect of glyphosate formulation (Roundup) on surface water quality parameters of paddy-growing fields. International symposium on water and air pollution recent advances in Research, Postgraduate Institute of Science (PGIS), University of Peradeniya, Sri Lanka and National Chung University (NCHU), Taiwan. P. 13.
2. Shanmuganathan, E., **De Silva, W.N.D.**, Attanayake, A.P., & Arawwawala, L.D.A.M. (2021). Quantification of polyphenol and flavonoid content in aqueous leaves extract of Ivy gourd collected from different geographical locations in Sri Lanka. Faculty of Medicine Academic Sessions 2020, Galle, Sri Lanka. P.90
3. **De Silva, W.N.D.**, Attanayake, A.P., Karunaratne, D.N., Pamunuwa, K.M.G.K., Arawwawala, L.D.A.M. (2021). Optimization of Preparation of Alginate Nanoparticles for Encapsulation of Ivy Gourd Extract. University of Ruhuna 18<sup>th</sup> Academic Sessions 2021, Galle, Sri Lanka. P. 91
4. **De Silva, W.N.D.**, Attanayake, A.P., Arawwawala L.D.A.M., Karunaratne, D.N., Pamunuwa, K.M.G.K., (2021). Evaluation of total polyphenol, total flavonoid content and alpha amylase inhibitory activity of three selected medicinal plant extracts. Research conference in Health Sciences, University of Sri Jayawardenepura, Sri Lanka. P. 170

5. **De Silva, W.N.D.**, Attanayake, A.P., Arawwawala L.D.A.M., Karunaratne, D.N., Pamunuwa, K.M.G.K., (2021). *In vitro* antidiabetic activity of aqueous leaf extract of *Coccinia grandis* L. encapsulated alginate nanoformulation. 3<sup>rd</sup> CBSL Conference, College of Biochemists in Sri Lanka. P.25
6. **De Silva, W.N.D.**, Attanayake, A.P., Arawwawala L.D.A.M., Karunaratne, D.N., Pamunuwa, K.M.G.K., (2021). Evaluation of  $\alpha$ -amylase and  $\alpha$ -glucosidase inhibitory potential in aqueous fruit extract of *Aegle marmelos* L. encapsulated alginate nanoformulation. SLMA 134<sup>th</sup> Anniversary International Medical Congress. P. 195
7. **De Silva, W.N.D.**, Attanayake, A.P., Arawwawala L.D.A.M., Karunaratne, D.N., Pamunuwa, K.M.G.K., (2022). Aqueous extract of *Catharanthus roseus* L. loaded alginate nanoparticles: Characterization and assessment of  $\alpha$ -glucosidase and  $\alpha$ -amylase inhibitory potential. 9<sup>th</sup> Ruhuna International Science and Technology Conference. P.37
8. **De Silva, W.N.D.**, Attanayake, A.P., Arawwawala L.D.A.M., Karunaratne, D.N., Pamunuwa, K.M.G.K., (2022). *In vitro* antioxidant activity of different extracts of *Coccinia grandis* L. encapsulated alginate nanoparticles. International Research Conference in Health Sciences, University of Sri Jayewardenepura. P.77
9. **De Silva, N. D.**, Attanayake, A.P., (2023). Screening of anti-inflammatory potential of three selected Sri Lankan medicinal plant extracts. International Symposium on Agriculture and Environment, Faculty of Agriculture, University of Ruhuna. P. 146
10. **De Silva, W.N.D.**, Attanayake, A.P., Arawwawala, L.D.A.M., Karunaratne, D.N., Pamunuwa, K.M.G.K. (2023). *In vitro* release of polyphenols from different extracts of *Coccinia grandis* L. encapsulated alginate nanoparticles. University of Ruhuna 20<sup>th</sup> Academic Sessions 2023, Galle, Sri Lanka. P. 109.
11. **De Silva, W.N.D.**, Attanayake, A.P., Arawwawala, L.D.A.M., Karunaratne, D.N., Pamunuwa, K.M.G.K. (2023). *In vitro* carbohydrate metabolizing enzyme inhibitory potential of alginate nanoparticles encapsulated of *Catharanthus roseus* L. extracts. Research conference in Health Sciences, University of Sri Jayawardenepura, Sri Lanka. P. 122
12. **De Silva, W. N. D.**, Attanayake, A.P., Karunaratne, D. N., Pamunuwa, K. M. G. K., Arawwawala L.D.A.M., (2023). Formulation and characterization of *Aegle marmelos* L. fruit extracts-encapsulated alginate nanoparticles as a promising source of natural antioxidants. 3<sup>rd</sup> CBSL Conference, College of Biochemists in Sri Lanka, Colombo, Sri Lanka. P. 22
13. **De Silva, N. D.**, Attanayake, A.P., Karunaratne, D. N., Arawwawala L.D.A.M., Pamunuwa, K. M. G. K., (2023). *In vitro* anti-inflammatory activity, release of polyphenols and accelerated stability of *Aegle marmelos* L. fruit extracts encapsulated alginate nanoparticles. International Research Symposium of the Faculty of Allied Health Sciences. University of

Ruhuna, Galle, Sri Lanka. P. 39

14. **De Silva, W. N. D.**, Attanayake, A.P., Karunaratne, D. N., Pamunuwa, K. M. G. K., Arawwawala L.D.A.M., (2023). *Aegle marmelos* L. fruit extracts encapsulated alginate nanoparticles and their *in vitro* antidiabetic activity. Faculty of Medicine Academic Sessions 2023, Galle, Sri Lanka. P. 66
15. **De Silva, N.D.**, Attanayake, A.P., Arawwawala, L.D.A.M., Jayatilaka, K.A.P.W., (2024). Standardization, release kinetics, acute toxicity assessment of nanoencapsulated aqueous extract of *Coccinia grandis* L. (Ivy Gourd). University of Ruhuna 21<sup>st</sup> Academic Sessions 2024, Galle, Sri Lanka. P. 27.
16. **De Silva, N. D.**, Attanayake, A.P., Arawwawala L.D.A.M., Nandasiri R.W.D.S., Wasana K.G.P., Weerathna T.P., (2024). Assessment of quality control parameters and nutrient composition of a herbal supplement *Asparagus falcatus* L. for non-alcoholic fatty liver disease. International Research Symposium of the Faculty of Allied Health Sciences. University of Ruhuna, Galle, Sri Lanka. P. 119
17. Katippearachchi S.H., **De Silva, N. D.**, Faizan M., Attanayake, A.P., Kalansuriya, P., (2024). *In vitro* anti-diabetic activity of selected medicinal plant extracts: A comparison with *in silico* studies. International Research Symposium of the Faculty of Allied Health Sciences. University of Ruhuna, Galle, Sri Lanka. P. 39
18. Wasana, K.G.P., **De Silva, N.D.**, Attanayake, A.P., Weerathna, T.P., (2024). Hypertriglyceridemic waist phenotype and its association with metabolic syndrome traits in overweight or obese adults: A community-based cross-sectional study in Southern Sri Lanka. Faculty of Medicine Academic Sessions 2023, Galle, Sri Lanka. P. 22
19. **De Silva, N. D.**, Attanayake, A.P., (2025). *In vitro* anti-inflammatory activity of *Catharanthus roseus* L. extracts encapsulated alginate nanoparticles. 5<sup>th</sup> CBSL Conference, College of Biochemists in Sri Lanka, Colombo, Sri Lanka. P. 50.
20. **De Silva, N. D.**, Attanayake, A.P., (2025). Biological activity assessment of *Catharanthus roseus* L. leaf extract encapsulated alginate nanoparticles: Development of novel nanotherapeutic agent against diabetes mellitus. Faculty of Medicine Academic Sessions 2025, Galle, Sri Lanka. P. 27.
21. Wasana, K.G.P., **De Silva, N.D.**, Attanayake, A.P., Weerathna, T.P., (2025). Fasting vs. non fasting lipid profiles in apparently healthy adults: A cross-sectional study Faculty of Medicine Academic Sessions 2023, Galle, Sri Lanka. P. 37
22. **De Silva, N. D.**, Attanayake, A.P., Arawwawala L.D.A.M., (2025). Standardized bael fruit extracts loaded alginate nanoparticles as a novel herbal drug lead against glycation and chronic inflammation. 7<sup>th</sup> Biennial Research Symposium, Industrial Technology Institute, Colombo, Sri Lanka. P. 69.

23. **De Silva, N. D.,** Attanayake, A.P., Arawwawala L.D.A.M., (2025). Preparation, characterization, release kinetics, antiglycation activity and stability assessment of *Catharanthus roseus* L. extracts encapsulated alginate nanoformulations. International Research Symposium of the Faculty of Allied Health Sciences. University of Ruhuna, Galle, Sri Lanka. P. 9
24. **De Silva, N.D.,** Attanayake, A.P., (2025). Antidiabetic activity of bael fruit aqueous extract encapsulated alginate nanoformulation in streptozotocin-induced diabetic rats. University of Ruhuna 22<sup>nd</sup> Academic Sessions 2025, Galle, Sri Lanka. P. 82.

### **Extra – curricular activities**

- Leader of school senior debate team (2009-2012)
- Member of Southlands College chess team
- Member of media unit of Southlands college, Galle
- Participated as a main announcer of school special functions
- Participated interfaculty debate competition, Faculty of Science, university of Peradeniya
- Member of the Chemical Society of University of Peradeniya

### **Achievements**

- Won “Australian National Chemistry Quiz competition” with merit distinction in 2011
- Participated in the “All Island Inter School Chess Championship” in 2004
- Participated in many Chess Championship tournaments and won places (2002-2004)
- Won award as the best Sinhala announcer in school prize giving 2009
- Participated to “Sirasa The debater” debate competition 2011 and won award as the best debater in third round
- Participated in many debate competitions and won places (2008-2012)

### **Professional affiliations**

- Life member - The Nutrition Society of Sri Lanka
- Life member - Sri Lanka Association for Laboratory Animal Science
- Member – Institute of Chemistry Ceylon
- Life member - College of Biochemists in Sri Lanka
- Life member - Sri Lanka Association for the Advancement of Science
- Member - Young Scientists Forum
- Member – Galle Medical Association

## **Referees**

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