



# RAMESHKUMAR SANTHANAM

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## QUALIFICATIONS

- Doctor of Philosophy (Medical Biotechnology), Universiti Putra Malaysia, Malaysia
- Post Graduate Diploma in Clinical Research (Clinical Research), ICRI, India
- Bachelor of Technology (Biotechnology), Anna University, India

## FIELD OF RESEARCH

- Pharmacognosy
- Cell and Molecular Biology
- Cell Signaling

## RESEARCH INTEREST

My research interest is mainly focused on natural products drug discovery. Area of specialization are Pharmacognosy, Cell Biology, Cell Signaling, and Biochemistry. Our aim is to target and identify potential drug from natural sources such as plants, animals and marine sources as well as traditional medicines to treat various ailments. Our research group concerns isolation, identification, structure elucidation and biological properties of constituents from natural resources. In particular, we mainly focus on areas such as Chromatography, Spectroscopy, Cell culture, molecular biology and explore macromolecules/small molecules as well as specific biomarkers for photo protection, wound healing, and oxidative damage. Additionally, our group investigates the antioxidant, antimicrobial, anti-inflammation, anti-diabetic and anticancer properties of the natural sources in the form of extract, fraction as well as pure compound which specifically determines the sole or synergistic effect.

## RESEARCH PROJECTS

- Photoprotective properties of *Moringa concanensis*
- Wound healing potential of Marine Polychaetes
- Photoprotective properties of *Centella asiatica* and *Ipomea aquatica* obtained through various drying techniques

## EXPERT LINKAGES

- *PROF. HAIXIA CHEN, TIANJIN UNIVERSITY, CHINA*
- *PROF. KHOZIRAH SHAARI, UNIVERSITI PUTRA MALAYSIA, MALAYSIA*
- *DR. ARULSELVAN PALANISAMY, SCIGEN RESEARCH & INNOVATION PVT LTD, INDIA*

## PROFFESIONAL MEMBERSHIP

- Royal Society of Biology

## GRANTS

Project	: Protective effect of <i>Moringa concanensis</i> Nimmo. Bark extract and its constituents against UV induced damage in Human Dermal Fibroblasts (HDF) cells
Position	: Project Leader
Grant Name	: TAPE-RG
Status	: Active
Amount	: RM20000

## AWARDS

- **BRONZE MEDAL** - Awarded in Minggu Penyelidikan & Inovasi (MPI) 2020
- **SILVER MEDAL** - Awarded by Ministry of Education, Malaysia in PECIPITA 2019
- **SILVER MEDAL**- Awarded by Malaysian invention and design society in ITEX 2019

## PUBLICATIONS

### Journal Article

1. Awatif, N., Syahirah, H., Shahirah, N, Santhanam, R., Haron, M., Maulidiani, M., Ali, A., Idris, I., Wan Iryani, W. I., Acute wound healing potential of *Diopatra claparedii* Grube, 1878 aqueous extract on Sprague Dawley rats. Evidence based complementary and alternative medicine.
2. Fatimah, H., Zulkefli, N, Abidin, Z., Fairus, H., Santhanam, R., 2020. Anti-acanthamoeba efficacy of two commonly used eyedrops. Malaysian Applied Biology Journal.
3. Santhanam, R., Rameli P. M. A., Jeffri, A.A., Ismail, W.I.W., 2020. Bovine based collagen dressings in wound care management. Journal of Pharmaceutical Research International.
4. Santhanam, R., Katyakyini, M., Gothai, S., Shaari, K., Senthilkumar, P.K., Palanivel, G, Arulselvan, P., 2020. *Zanthoxylum rhetsa* bark fractions exert anti-inflammatory activity

by suppression of NF- $\kappa$ B in lipopolysaccharide-stimulated macrophages, *Pharmacognosy Magazine* 16(70), 385-390. (IF – 1.310, Q4)

5. Daud, S., Karunakaran, T., Santhanam, R., Nagaratnam, R. S., Jong, M., Gwendoline, C.L.E., 2020. Cytotoxicity and nitric oxide inhibitory activities of Xanthones isolated from *Calophyllum hosei* Ridl. DOI: 10.1080/14786419.2020.1819273 (IF-2.158, Q2)
6. Karunakaran, T., Firouz, N. S., Santhanam, R., Jong, M., 2020. Phytochemicals from *Calophyllum macrocarpum* Hook.f. and its Cytotoxic Activities, *Natural Product Research*. <https://doi.org/10.1080/14786419.2020.1795658> (IF-2.158, Q2)
7. Gao, X., Santhanam, R., Xue, Z., Jia, Y., Wang, Y., Lu, Y., Chen, H., 2020. A ntioxidant,  $\alpha$ -amylase and  $\alpha$ -glucosidase activity of various solvent fractions of *I. obliquus* and the preventive role of active fraction against H<sub>2</sub>O<sub>2</sub> induced damage in hepatic L02 cells as fungisome. *Journal of Food Science*. (IF-2.478, Q2)
8. Gao, X., Wang, C., Santhanam, R., Chen, Z., Chen, Y., Xue, Z., Ma, Q., Guo, Q., Liu, W., Chen, H., 2019. Antioxidant and anti-hypertensive effects of garlic protein and its hydrolysates with the related mechanism, *Journal of Food Biochemistry* 44, e13126. (IF – 1.662, Q3)
9. Xue, Z., Ma, Q., Guo, Q., Santhanam, R., Gao, X., Chen, Z., Wang, C., Chen, H., 2019. Physicochemical and functional properties of extruded dietary fiber from mushroom *Lentinula edodes* residues. *Food Bioscience* 32, 100452. (IF – 3.067, Q1)
10. Gao, X., Wang, C., Chen, Z., Chen, Y., Santhanam, R., Xue, Z., Ma, Q., Li, W., Zhang, M., Chen, H., 2019. Effects of N-trans-feruloyltyramine isolated from laba garlic on antioxidant, cytotoxic activities and H<sub>2</sub>O<sub>2</sub>-induced oxidative damage in HepG2 and L02 cells. *Food and Chemical Toxicology* 130, 130 -141. (IF - 4.679, Q1)
11. Chen, Z., Li, W., Guo, Q., Xu, L., Santhanam, R., Gao, X., Chen, Y., Wang, C. L., Chen, H., 2019. Anthocyanins from dietary black soybean potentiate glucose uptake in L6 rat skeletal muscle cells via up-regulating phosphorylated Akt and GLUT4. *Journal of Functional Foods* 52, 663-669. (IF -3.701, Q1)
12. Guo, Q., Xu, L., Chen, Y., Ma, Q., Santhanam, R., Xue, Z., Gao, X., Chen, H., 2019. Structural characterization of corn silk polysaccharides and its effect in H<sub>2</sub>O<sub>2</sub> induced oxidative damage in L6 skeletal muscle cells. *Carbohydrate Polymers* 208, 161 – 167. (IF -7.182, Q1)
13. Xu, L., Li, W., Chen, Z., Guo, Q., Wang, C. L., Santhanam, R., Chen, H., 2019. Inhibitory effect of epigallocatechin-3-O-gallate on  $\alpha$ -glucosidase and its hypoglycemic effect via targeting PI3K/AKT signalling pathway in L6 skeletal muscle cells. *International Journal of Biological Macromolecules* 125, 605 – 611. (IF -5.162, Q1)
14. Guo, Q., Chen, Z., Santhanam, R., Xu, L., Gao, X., Ma, Q., Xue, Z., Chen, H., 2019. Hypoglycemic effects of polysaccharides from corn silk (*Maydis stigma*) and their beneficial roles via regulating the PI3K/Akt signaling pathway in L6 skeletal muscle myotubes. *International Journal of Biological Macromolecules* 121, 981 – 988. (IF -5.162, Q1)
15. Chen, Z., Li, W., Santhanam, R., Wang, C., Gao, X., Chen, Y., Wang, C. L., Xu, L., Chen, H., 2018. Bioactive peptide with antioxidant and anticancer activities from black soybean [*Glycine max* (L.) Merr.] by product: isolation, identification and molecular docking study. *European Food Research and Technology* 245, 677-689. (IF -2.366, Q1)

16. Ma, Q., Santhanam, R., Guo, Q., Gao, X., Xue, Z., Chen, H., 2018. Effect of different drying methods on the physicochemical properties and antioxidant activities of polysaccharides from mulberry leaf. *International Journal of Biological Macromolecules* 119, 1137 – 1143. (IF -5.162, Q1)
17. Wang, C., Santhanam, R., Gao, X., Chen, Z., Chen, Y., Wang, C. L., Xu, L., 2018. Preparation, characterization of polysaccharides fractions from *Inonotus obliquus* and their effects on  $\alpha$ -amylase,  $\alpha$ -glucosidase activity and H<sub>2</sub>O<sub>2</sub>-induced oxidative damage in hepatic L02 cells, *Journal of Functional Foods* 48, 179-189. (IF -3.701, Q1)
18. Chen, Z., Wang, C., Gao, X., Chen, Y., Santhanam, R., Wang, C. L., Xu, L., Chen, H., 2018. Interaction characterization of preheated soy protein isolate with cyanidin-3-O-glucoside and their effects on the stability of black soybean seed coat anthocyanins extracts, *Food Chemistry* 271, 266-273. (IF – 6.306, Q1)
19. Santhanam, R., Tayyab Akhtar, M., Fakurazi, S., Ahmad, S., Abas, F., Safinar Ismail, I., Rukayadi, Y., Shaari, K., 2018. Inhibition of UVB induced pro-inflammatory cytokines and MMP expression by *Zanthoxylum rhetsa* bark extract and its active constituent hesperidin – *Phytotherapy Research* – DOI: 10.1002/ptr.6092 (IF – 4.067, Q2).
20. Wang, C., Gao, X., Santhanam, R., Chen, Z., Chen, Y., Wang, C. L., Xu, L., Ferri, N., Chen, H., 2018. Effects of polysaccharides from *Inonotus obliquus* and its chromium (III) complex on advanced glycation end-products formation,  $\alpha$ -amylase,  $\alpha$ -glucosidase activity and H<sub>2</sub>O<sub>2</sub>-induced oxidative damage in hepatic L02 cells, *Food and Chemical Toxicology* 116, 335 -345. (IF - 4.679, Q1)
21. Karunakaran, T., Ismail, I.S., Nor, S. M. M., Palachandran, K., Santhanam, R., Gwendoline C L, E., 2018. Nitric oxide inhibitory and anti- *Bacillus* activity of phenolic compounds and plant extracts from *Mesua* species, *Revista Brasileira de Farmacognosia* 28(2), 231 – 234.
22. Santhanam, R., Tayyab Akhtar, M., Fakurazi, S., Ahmad, S., Abas, F., Safinar Ismail, I., Rukayadi, Y., Shaari, K., 2017. Utilization of the bioactive fraction of *Zanthoxylum rhetsa* bark extract as an active ingredient in broad spectrum sunscreen cream formulation. *Industrial Crops and Products* 96, 165- 172 (IF – 4.244, Q1).
23. Sowndhararajan, K., Santhanam, R., Hong, S., Jhoo, J.-W., 2016. Kim, S., Suppressive effects of acetone extract from the stem bark of three *Acacia* species on nitric oxide production in lipopolysaccharide-stimulated RAW 264.7 macrophage cells. *Asian Pacific Journal of Tropical Biomedicine*. DOI: 10.1016/j.apjtb.2016.06.005. (IF – 1.903, Q2).
24. Santhanam, R., Ahmad, S., Abas, F., Safinar Ismail, I., Rukayadi, Y., Tayyab Akhtar, M., Shaari, K., 2016. Bioactive Constituents of *Zanthoxylum rhetsa* Bark and Its Cytotoxic Potential against B16-F10 Melanoma Cancer and Normal Human Dermal Fibroblast (HDF) Cell Lines. *Molecules* 21, 652 (IF – 3.060, Q2)
25. Santhanam, R., Ahmad, S., Abas, F., Ismail, I.S., Rukayadi, Y., Shaari, K., 2013. Photoprotective properties of *Zanthoxylum rhetsa*: An in vitro analysis. *Journal of Chemical and Pharmaceutical Research* 5, 1512-1520.
26. Sathishkumar, T., Shanmugam, S., Rameshkumar, S., Rajavelan, G., Haridoss, V., 2010. Characterization of salivary glutathione reductase in normal individuals and its implications on smokers. *Researcher* 4, 74-81.

27. Sathishkumar, T., Shanmugam, S., Rameshkumar, S., Rajavelan, G., Haridoss, V., 2008. In vitro antioxidant assessment of saliva from smokers and non-Smokers. *Advanced Biotech*, 21-25.
28. Santhanam, R., Gothai, S., Karunakaran, T., Hazlina, A, H., Muniandy, K., Gao, X., Senthikumar, P, K., Arulselvan, P., Identification of chemical constituents and inhibitory effect of *Ficus deltoidea* extract against LPS induced NF- $\kappa$ B inflammatory pathway in murine macrophage 264.7 cells. *Pharmacognosy Magazine* – Accepted (IF – 1.310, Q4).

#### Patent/Copyright

1. Santhanam, R., Ahmad, S., Abas, F., Safinar Ismail, I., Rukayadi, Y., Tayyab Akhtar, M., Shaari, K., 2012. An extract of *Zanthoxylum rhetsa* and use thereof. Malaysia: PI 2014003562.
2. Norisah, R., Mouriya, G, K., Santhanam, R., Vigneswari, S., 2020. PhytogermX- An innovative germ free fabrics - LY2020000543

#### Book Chapter

1. Chen, H., Xue, Z., Santhanam, R., 2018. Dietary Fiber from Edible Mushrooms and Their Health Effects - Medicinal Mushrooms: Cultivation, Properties and Role in Health and Disease. Nova Science Publishers, Inc (ISBN: 978-1-53614-592-2).

## SUPERVISION

### Doctor of Philosophy Degree

Thesis Title : Enhancing the therapeutic potential of gut microbiome against cancer and bacterial infections through phytobiotics in chicken models

Student Name : Sowmiya

Role : Co-Supervisor

Status : Active

### Master Degree

Thesis Title : Silver Nanoparticles- Polyhydroxyalkanoates based Incorporated Nanobiocomposite Films towards Food Packaging Applications

Student Name : Mouriya Govindan Kothandaraman

Role : Co-Supervisor

Status : Active

## COURSE TAUGHT

- Biochemistry

- Cell Signaling
- Cell and Molecular Biology
- Industrial Biotechnology

## LINKS

- <https://www.scopus.com/authid/detail.uri?authorId=55204584400>
- <https://publons.com/researcher/3536204/rameshkumar-santhanam/>
- [https://www.researchgate.net/profile/Rameshkumar\\_Santhanam](https://www.researchgate.net/profile/Rameshkumar_Santhanam)
- <https://scholar.google.com.my/citations?user=O9TlfaUAAAJ&hl=en>

## OTHERS

- International Relation Coordinator at Faculty of Science and Marine Environment, Universiti Malaysia Terengganu.
- Invited Speaker and Session Chairperson for “International Conference on Natural Therapeutics (ICNT-2020) at Dharmapuram Gnanambigai Government Arts and Science College, Mayiladuthurai
- Invited speaker as a Guest Lecturer in Kongunadu Arts and Science College, Coimbatore.
- Editorial Member in the 2nd Seminar on Biological Security and Sustainability organized by Faculty of Marine Science and Environment, Universiti Malaysia Terengganu, Malaysia
- Act as Instructor/Facilitator in Workshop on Basic Cell Culture Techniques organized by “Scigen Research and Innovation Pvt, Ltd., Thanjavur, India”
- Act as an Instructor in Workshop on spectroscopic method-Nuclear magnetic resonance organized by Laboratory of Natural products, Institute of Bioscience, Universiti Putra Malaysia, Malaysia
- Potential Reviewer in many international reputed journals such as Life Sciences, Food Bioscience, International Food Research Journal, Journal of Photochemistry and Photobiology B-biology, Journal of Biochemical and Molecular Toxicology, Journal of King Saud University – Science, etc.