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Stress response and health affecting compounds in Brassicaceae

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Citation

Jahangir, M. (2010, May 20). *Stress response and health affecting compounds in Brassicaceae*. Retrieved from <https://hdl.handle.net/1887/15518>

Version: Corrected Publisher's Version

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Downloaded from: <https://hdl.handle.net/1887/15518>

Note: To cite this publication please use the final published version (if applicable).

Acknowledgements

First of all I would like to acknowledge all of my teachers in my academic carrier. I would like to thank the departments of Food Science & Technology, in the University of Arid Agriculture, Rawalpindi and in the N.W.F.P. Agricultural University, Peshawar, Pakistan, for raising me as a food technologist. I would like to acknowledge the department of Pharmacognosy and Metabolomics, Institute of Biology, Leiden University in special, where I started my real scientific carrier.

I would like to thank the Higher Education Commission (HEC) of Pakistan for supporting me with a scholarship for my studies, while I also thank the Netherlands Organization for International Cooperation in Higher Education (NUFFIC) for managing, my scholarship, health insurance, residence permit and correspondence with HEC.

Young H. Choi and Hye K. Kim were always available for guiding and helping me for all the guidance and help, whenever I need. I am also grateful to Anneke Poels for all of her academic and non academic support.

I would like to thank Ghulam Hasnain not only for introducing me in the Pharmacognosy and Metabolomics department but also for all of his support, especially in the first year of my study. I will always remember his words whenever I was depressed or felt home sick. I will remember his cooking for me and giving me a lift from home to lab and back to home, on his small bike.

I am grateful to Alfi Khatib, Ibrahim B. Abdel-Farid, Nancy Dewi Yuliana, Natali Rianika Mustafa, and Sanimah Simoh. I learnt a lot from all of you. For sure my degree would have taken much longer time without the support of Ibrahim and Nancy. I would express further gratitude to Ibrahim for helping me in NMR and HPLC and to Nancy for helping me in bioassays and chromatographic works. As I didn't have a scholarship in the first two years of my PhD, it was not always easy to continue my studies, but all these people helped me. I also thank all of you for introducing me to Egyptian, Indonesian and Malaysian food.

Acknowledgements

I would like to extend my gratitude to Krishna Parsad Bastola for all of his support, especially helping me with NMR structure elucidation. In the same time I thank Justin T. Fishedick and Mian Yahya Mushtaq for helping me with GC-MS, Frank helped me with HPLC, Teus Luijendijk and Arno for helping with different instruments, Andrea Lubbe for helping me with the acetylcholine esterase inhibition assay. I thank my students, Pierre-Jean and Pablo Sanchez for helping me in different experiments. Also I would like to appreciate the contribution of Ms. Erica G. Wilson for her help in correcting different manuscripts from this thesis. I thank C. H. Ric de Vos, Harry H. Jonker, Ms. Nicole M. van Dam and all others who I did not mention here, for their help for different experiments in this thesis.

I appreciate all the members of the Pharmacognosy department, Leiden University for all of their help and support. I thank my Pakistani and non-Pakistani friends in the Netherlands, with whom I used to have personal and professional discussions, which made me feel at home while living in the Netherlands. All of you gave me a friendly environment in and/or outside the lab. I learnt science, ethics, culture, religion and a lot more from you.

I would like to thank my sister and brothers for all of their support, especially helping me for my studies. Last but not least, I would like to thank my parents. I can't find enough words to express my gratefulness to you. I dedicate this work to my parents.

Curriculum Vitae

Muhammad Jahangir was born in 1979 in Haripur (Hazara), Pakistan. He obtained his high school education from Jinnah Jam-e High School in 1995, and completed higher secondary education from Telecom Boy's Public School and College, Haripur, in 1997. For further studies he got a merit scholarship from the provincial government of N.W.F.P. for a BSc Agriculture study at the University of Arid Agriculture, Rawalpindi. For his BSc research project, he studied the "Effect of stabilizers on tomato concentrate". After graduation in 2001, he got admission in the N.W.F.P. Agricultural University, Peshawar, in the MSc Food Science and Technology program, which he finished in 2003. His MSc project concerned "The development and storage study of low caloric mango squash".

He started his career with a job as executive trainee in Qarshi Industries, one of the leading industries in Pakistan for herbal medicines and food products. After six months working with Qarshi, he moved to a food processing industry, Salman Corporation, Islamabad and worked there as "Food Technologist Product Development" for almost a year. He decided to continue his academic career for PhD study in the department of Pharmacognosy and Metabolomics, Institute of Biology, Leiden University, for which he received a scholarship from the Higher Education Commission (HEC) of Pakistan in 2007. He joined the *Brassica* project and worked on the "Stress response and health affecting compounds in Brassicaceae".

Apart from attending international, national and internal trainings, conferences, and seminars, until now he has three poster publications, and eight journal publications (articles and reviews).

List of publications

1. Jahangir M., Abdel-Farid I. B., Jonker H. H., Vos C. H. de., Choi Y. H., Verpoorte R. Metabolomic profiling of *Brassica rapa* and *Raphanus sativus* on different growth stages. ***In process***.
2. Jahangir M., Abdel-Farid I. B., Choi Y. H., Verpoorte R. Effect of postharvest storage time and temperature on red radish (*Raphanus sativus*). ***In process***.
3. Jahangir M., Abdel-Farid I. B., Kim H. K., Choi Y. H., Verpoorte R. 2009. Healthy and unhealthy plants: The effect of stress on the metabolism of Brassicaceae. *Environ. Exp. Bot.* 67 (1): 23 – 33.
4. Jahangir M., Kim H. K., Choi Y. H., Verpoorte R. 2009. Health-affecting compounds in *Brassicaceae*. *Comp. Rev. Food Sci. Food Saf.* 8: 31–43.
5. Jahangir M., Abdel-Farid I. B., Choi Y. H., Verpoorte R. 2008. Metal ion-inducing metabolite accumulation in *Brassica rapa*. *J Plant Physiol.* 165 (14): 1429–1437.
6. Jahangir M., Kim H. K., Choi Y. H., Verpoorte R. 2008. Metabolomic response of *Brassica rapa* submitted to pre-harvest bacterial contamination. *Food Chem.* 107 (1): 362–368.
7. Abdel-Farid I. B., Jahangir M., van den Hondel C. A. M. J. J., Kim H.K., Choi Y.H., Verpoorte R. 2009. Fungal infection-induced metabolites in *Brassica rapa*. *Plant Sci.* 176 (5): 608 – 615.