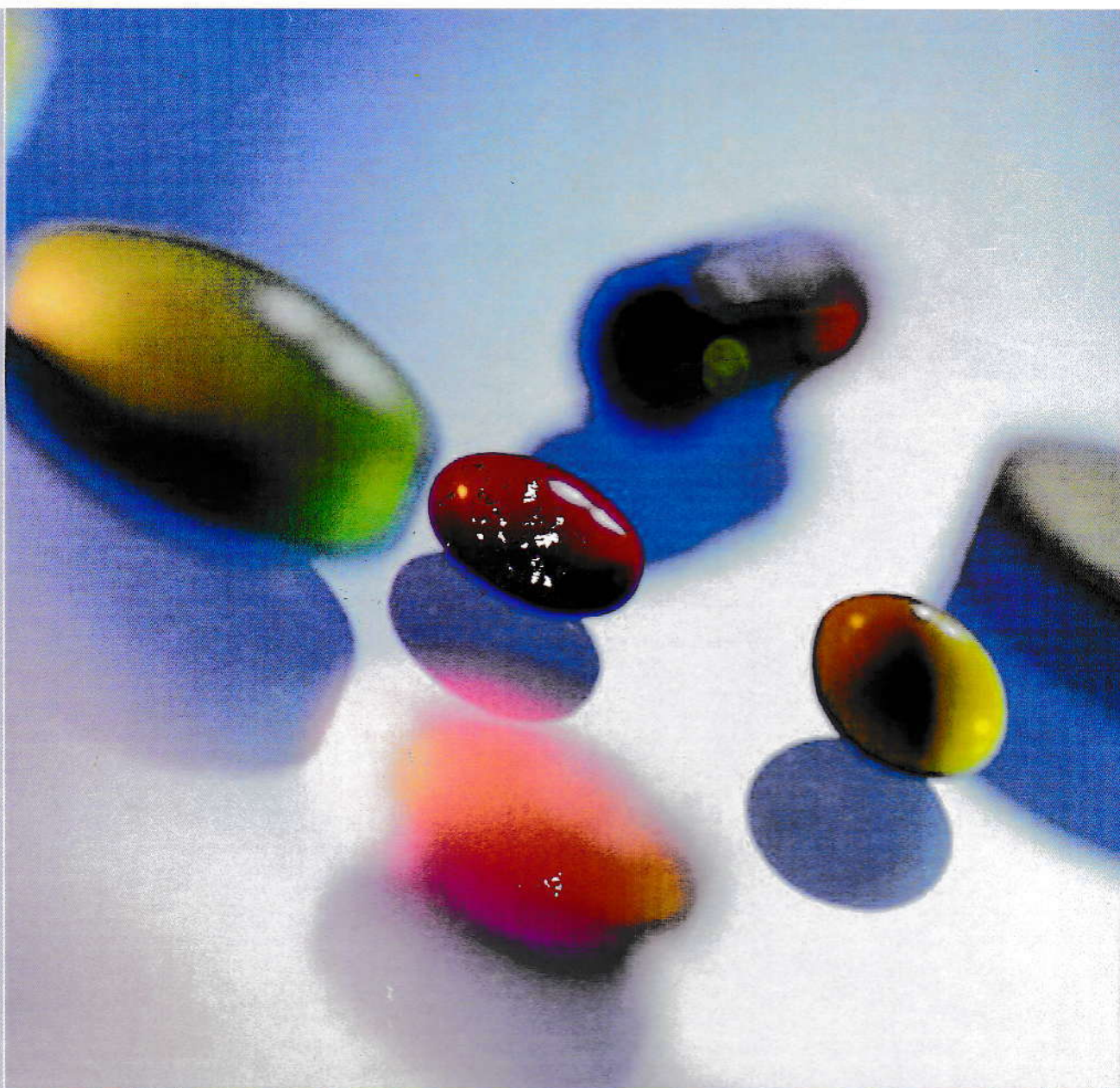




PROCEEDING

International Seminar Of Natural Product

Incorporation of complementary medicines and natural product education in pharmacy curriculum: Opportunities and challenges



Organized by:

Sekolah Tinggi Ilmu Farmasi Makassar
Akademi Farmasi Kebangsaan Makassar





PROCEEDING

International Seminar Of Natural Product

Incorporation of complementary medicines and natural product education in pharmacy curriculum: Opportunities and challenges

ISSN 2443 3675



EDITOR:

Andries S Koster	(Utrecht University, Netherlands)
Chieh-Hsi Wu	(Taipei Medical University, Taipei, Taiwan)
Takeshi Masuda	(Kumamoto University, Japan)
Mahdi Jufri	(University of Indonesia, Indonesia)
Orawin Prangsaengtong	(Srinakharinwirot University, Thailand)
Ji-Ye Kee	(Wonkwang University, Republic of Korea)
Yue Zhou	(Institute of Chinese Materia Medica, Shanghai)
Agung Endro Nugroho	(Universitas Gadjah Mada, Indonesia)
Besse Hardianti	(Sekolah Tinggi Ilmu Farmasi Makassar, Indonesia)
Wahyu Hendrarti	(Sekolah Tinggi Ilmu Farmasi Makassar, Indonesia)
Jainer Pasca S	(Sekolah Tinggi Ilmu Farmasi Makassar, Indonesia)
Lukman M	(Sekolah Tinggi Ilmu Farmasi Makassar, Indonesia)
Micrun Nisa	(Akademi Farmasi Kebangsaan Makassar, Indonesia)
Reny Syahrani	(Akademi Farmasi Kebangsaan Makassar, Indonesia)
Natsir Djide	(Hasanuddin University, Indonesia)
Subehan	(Hasanuddin University, Indonesia)
Sukamto	(Hasanuddin University, Indonesia)

Dalton Hotel Makassar

April 1st, 2017

Sekolah Tinggi Ilmu Farmasi Makassar
Akademi Farmasi Kebangsaan Makassar





International Seminar Of Natural Product

Incorporation of complementary medicines and natural product education in pharmacy curriculum: Opportunities and challenges

Makassar, April 1st, 2017, Indonesia

Contents

1. Optimization Prospect Of Ethanol Extract Stem Bark Banyuru (*Pterospermum celebicum*, Miq) and Bee Pollen As The Composition Of Formulations Sunscreen Simplex Lattice Design Method 1
Asnah Marzuki, Latifah Rahman, Sukanto
2. Subchronic Toxicity Test Of Maja (*Aegle marmelos* L.) Corr Fruit Extract On Mice (*Mus musculus*) Liver And Kidney 10
Rina Priastini Susilowati
3. In Vivo of Anti-Hyperglycemia Activity Extract of Polyphenol From The Brown Marine Algae *Sargassum* sp. 14
Agung Giri Samudra, Fathnur Sani K, Asril Burhan
4. Determination of Extract Quality Parameters of Sepabang (*Melastoma Malabathricum* L.) Leaves From Dayak Bahau and Abai Ethnic in Borneo and Its Antibacterial and Antifungal Activities 17
Nur Mita¹, M Arifuddin, Mirhansyah Ardana, Mukti Priastomo, Sofa Farida
5. Analysis Phenolic Compound and Antioxidant Activity of Ethyl Acetat Purification Extract Of Sawo Manila (*Manilkara zapota* L.) Leaf 22
Zainal Abidin, Andi Adelah, Marwa, Dwi Susilastuti, Risal
6. Adenosine Administration Alleviates Cyclophosphamide-induced Acute Hepatic and Renal Injury in Rats 25
Yulia Yusrini Djabir, Habibie, Usmar, Elly Wahyudin, Ika Suryana, Almaidah Engelen, Ummu Sumayyah
7. GC-MS Profiling From Red & White Pomelo Peel (*Citrus maxima*) 29
Zulkaida, Rezki Amriati syarif Ahmad Najib
8. Improved Synthesis of Burseran: Its Activity Against Pancreatic Tumor Xenografts 31
Yusnita Rifai, Desi Rosanti, Midori A Arai, Masami Ishibashi
9. Effect of Different Super Disintegrants on Formulation of Glibenclamide Fast Dissolving Tablets 35
Jainer Pasca Siampa, Michrun Nisa, Maria Ulfa, Harlinda
10. Anticoagulant Effect of Ethanol Extract of Garlic (*Allium sativum* Linn.) in Mice (*Mus musculus*) 38
Julianri Sari Lebang, Wahyu Hendrarti, Anang Mukrinin T
11. Utilization of Endophytic Fungal from Mulberry Leaf as antioxidant 41
Sukriani Kursia, Herlina Rante, Fitriyanti Jumaetri Sami, Adryani Mey W
12. Acute Toxicity Test Ethanol Extract Leaf Kersen (*Muntingia calabura* L.) Method Brine Shrimp Lethality Test (BSLT) 44
Maulita Indrisari, Nurkhairi, Asril Burhan
13. Prospects Purified Ethanol Extract of Peel of Apple (*Phyrus malus* L) as Antioxydants 48
Sukmawati, Rusli
14. Comparison of Antibacterial Activities Extracts Water, Ethanol 96% and Ethanol 48% Leaves *Ipomoea pes-caprae* (L.) R. Br.) of the *Escherichia coli* 51
Sukriani Kursia, Reny Syahrini, Rian Sundari



15. **Development of Self-nanoemulsifying Drug Delivery Systems of *Lansium domesticum* Peel Extract** 55
Latifah Rahman, Rosany Tayeb, Satriyani, Elly Wahyudin, Aliyah, Sumarheni
16. **Virtual Screening of Active Compounds of Natural Products as Non-Nucleoside Reverse Transcriptase Inhibitors** 62
Nursalam Hamzah, Latri Dwita Sari Amahoru, Nur Syamsi Dhuha
17. **Survey Of Knowledge And Attitudes Outpatient In Batua Primary Health Care To Use Of Antibiotics** 64
Fajriansyah, Naimah Ramli, Akbar Awaluddin, Amalia K
18. **Antioxidant and Cytotoxic Activities and Phytochemical Screening of Beligo (*Benincasa hispida* Thunb. Cogn) Seeds Extract** 68
M Rusdi, Novita Sismasari, Agustiana, Sitti Fauziah Noer, Tahirah Hasan
19. **Flavonoid Content Analysis of Ethyl Acetate Fraction of Neem Leaf (*Azadiractha indica* A. juss) by UV-Vis spectrophotometry** 71
Imrawati, Zainal Abidin, Nurul Fatimah
20. **Testing the Antihiperglycemia Effect Of Red Ginger Ethanol Extract (*Zingiber officinale* Lin Var. Rubrum) Toward Mice (*Mus musculus*) In Alloxan Induced Diabetic** 74
Sitti Rahimah, Faizal Attamimi, Yelda Kapitan
21. **Stability Evaluation of Temulawak (*Curcuma xanthorrhiza* Roxb) Suspension As Hepatoprotector: Parameter SGOT/SGPT** 78
Maria Ulfa, Besse Hardianti, Amelia Dwi Saputri
22. **Immunomodulatory Activity Of Ethanol Extract Of *Passiflora Foetida* Linn On Secretion Of Primary And Secondary Antibodies In Pre-Clinical** 84
Andi Emelda, Auliawati Rusli, Muhammad Khamil Amirullah
23. **Formulation and Evaluation Propranolol HCl Liquisolid Using Hydroxypropyl Methylcellulose as Sustained Release Polymer** 87
Aliyah, Ernawati, Nursiah Hasyim
24. **Synthesis of Sodium Carboxymethyl Cellulose (Na.CMC) from Cassava Cellulose (*Manihot utilissima*) with Sodium Chloro Acetate (SCA) as a Precursore Agent** 90
Fitriyanti Jumaetri Sami, Syamsu Nur, Naimah Ramli, Aan Rukmana
25. **Evaluation of Acute Dose Toxicity Test of Syrup of Temulawak (*Curcuma xanthorrhiza* Roxb.) and Paliasa (*Kleinhovia hospita* Linn.)** 93
Rosany Tayeb, Rahmawati Syukur, Rina Agustina, Latifah Rahman, Aisyah Fatmawaty, Lukman M
26. **Formulation and Evaluation of Solid Lipid Nanoparticle (SLN) on Mulberry Leaf Ethanol Extract (*Morus alba* L.)** 95
Aisyah Fatmawaty, Nurul Arfiyanti Yusuf, Irmayani, Lukman M, A Nurfadilawati S
27. **Screening Cytotoxicity Activity of Pekak Seeds Ethanol Extract (*Illicium Verum* Hook. F) by Using Brine Shrimp Lethality Test (BSLT)** 99
Besse Hardianti, Maulita Indrisari, Elia Dede Wonga



Research Article

Antioxidant and Cytotoxic Activities and Phytochemical Screening of Beligo (*Benincasa hispida* Thunb. Cogn) Seeds Extract

M Rusdi¹, Novita Sismasari², Agustiana², Sitti Fauziah Noer², Tahirah Hasan²

¹Universitas Islam Negeri Alauddin Makassar, Muh. Yasin Limpo Street No. 36 Samata-Gowa, Indonesia

²Departement of Pharmacy, Universitas Islam Makassar, Makassar-Indonesia

ABSTRACT

The aims of this research were to determine the antioxidant and cytotoxic activities and phytochemical screening of Beligo (*Benincasa hispida* Thunb. Cogn) seeds extract. The extraction of Beligo seeds by maceration using ethanol 96%. Antioxidant activity was determined by using 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical. The IC_{50} value for DPPH assay was 54,987 ppm. The cytotoxic activity was assessed by using brine shrimp lethality test (BSLT). The LC_{50} values of the tested samples was 4,666 ppm. Phytochemical screening showed positive results for flavonoids, terpenoids, and alkaloids.

Keywords

Benincasa hispida Thunb. Cogn seeds, antioxidant, cytotoxic, phytochemical screening

INTRODUCTION

A free radical can be defined as any molecular species capable of independent existence that contains an unpaired electron in an atomic orbital. The presence of an unpaired electron results in certain common properties that are shared by most radicals. Many radicals are unstable and highly reactive. They can either donate an electron to or accept an electron from other molecules, therefore behaving as oxidants or reductants. (Cheeseman et al., 1993). Cell damage caused by free radicals appears to be a major contributor to cancer and degenerative diseases such as ischemic heart disease and cataract (Sies, H. et al., 1992)

Free radicals are electrically charged molecules, i.e., they have an unpaired electron, which causes them to seek out and capture electrons from other substances in order to neutralize themselves. Although the initial attack causes the free radical to become neutralized, another free radical is formed in the process, causing a chain reaction to occur. And until subsequent free radicals are deactivated, thousands of free radical reactions can occur within seconds of the initial reaction. Antioxidants are capable of stabilizing, or deactivating, free radicals before they attack cells. Antioxidants are absolutely critical for maintaining optimal cellular and systemic health and well-being. (Percival, 1998)

Benincasa hispida (Thunb.) Cogn., a member of the family Cucurbitaceae, is one of the famous crops that are grown primarily for its fruits and usually recognized with its

nutritional and medicinal properties especially in Asian countries. Kundur (Synonym: Beligo) fruit has been valued as a nutritious vegetable as it provides a good source for natural sugars, amino acids, organic acids, mineral elements and vitamins. A number of medicinal properties such as anti-diarrheal, anti-obesity, anti-ulcer, and antioxidant and diuretic have been ascribed to this fruit of high economic value. As a rich source of functionally important bioactives and therapeutics such as triterpenes, phenolics, sterols, and glycosides, the fruit has been widely used for the treatment of epilepsy, ulcer, and other nervous disorders in the native medicine system of Asia (Zaini et al., 2011)

Antioxidant activity and phytochemical screening of *Benincasa hispida* fruit extract have been reported by badhani et al.(2013) and antioxidant activity of *Benincasa hispida* seeds extract investigated by using Conventional Soxhlet Extraction (CSE) was reported by Mandana et al.(2012). However, Antioxidant and cytotoxic activities and phytochemical screening of Beligo (*Benincasa hispida* Thunb. Cogn) seeds extract investigated by using maseration extraction have not yet been reported before. This research was performed to determine the antioxidant and cytotoxic activities and phytochemical screening of Beligo seeds extract.

MATERIALS AND METHODS

Preparation of Plant Samples

Sample of *Benincasa hispida* Thunb. Cogn seeds was collected from Tonra in Bone, South Sulawesi, Indonesian. *Benincasa hispida* Thunb. Cogn seeds were washed then cut to reduce the size and dried in an oven

Correspondent to:

M Rusdi

E-mail: Muhammad.rusdi@uin-alauddin.ac.id

Telp/Fax: 0411-841879/8221400

at a temperature of 45 ° C for 24 hours. The samples was extracted by maceration method using ethanol 96%.

DPPH scavenging method

The following procedure was modified from those described by Mensor (2001) and amudha et al.(2016). Antioxidant activity of *Benincasa hispida* Thunb. Cogn seeds extract was performed by pipetting 10 µL, 20 µL, 30 µL, 40 µL, and 50 µL of stoc solution 1000 ppm then poured into 5 mL volumetric flask and added with 1 ml 0.4 mM DPPH, finally it was added with methanol precisely until concentration 2 ppm, 4 ppm, 6 ppm, 8 ppm and 10 ppm reached. The mixtures were homogenized by using vortex mixer, then covered with aluminiumfoil and incubated at room temperature in the for 30 min. The absorbance wasmeasured by Spectrophotometer UV Viseble at wavelength 513 nm

Brine Shrimp Lethality Test

The seawater was put in a small plastic container (hatching chamber) with a partition for dark (covered) and light areas. Shrimp eggs were added into the dark side of the chamber while the lamp above the other side (light) will attract the hatched shrimp. Two days were allowed for the shrimp to hatch and mature as nauplii (larva). After two days, when the shrimp larvae are ready. Ethanol extract of *B.hispida*, that will be tested each made in concentrations of 1, 10, 100, and 1000 ppm in sea water.

Pipette solution of ethanol extract from sample with concentration 1, 10, 100, and 1000 µg/mL then put into a test tube for each concentration and perform 3 repetitions. Control solution was performed without ethanol extract. Then added 3 mL of the seawater as well as 10 brine shrimps into each tube. Thus, there were 30 brine shrimps for each concentration. Then, volume of the test tubes was adjusted to 5 mL with seawater. The test tubes were left uncovered under lamp. The number of surviving shrimps was counted and recorded after 24 hours. By using probit analysis, lethality concentration (LC₅₀) was assessed at 95% of confidence interval.

Phytochemical screening

Phytochemical screening of the crude ethanol extract of *Benincasa hispida* Thunb. Cogn seeds was carried out according to standard methods (Mojab et al, 2003; Farnsworth, 1966; Ghasal and Mandal, 2012).

RESULTS AND DISCUSSIONS

Table 1. Avarage result of IC₅₀ value of Beligo (*Benincasa hispida* Thunb. Cogn) seed extract

Repetitions	IC50 Value (ppm)	Avarage result of IC50 value (ppm)
1	44,539	54,987 ± 11,996
2	52,335	
3	68,088	

DPPH free radical scavenging assay is the simplest method for evaluating the antioxidant potential of an extract, which is based on the electron-transfer that produces a violet solution (kedare,2011; Huang,2005).

The results depicted in Table 1 reveal that the ethanol extract of seeds of *Benincasa hispida* Thunb. Cogn possess strong antioxidative activity against the DPPH radical with value of IC₅₀ 54,987 ppm

Parameter of LC₅₀ value of tested ethanol extract gained from linear regrestion equation above is 4,666 ppm, so that it can be inferred that ethanol extract of *Benincasa hispida* Thunb. Cogn seeds has cytotoxic activity against *Artemia salina*, because its LC₅₀ value is lower than 1000 ppm. So that extract of *Benincasa hispida* Thunb. Cogn seeds has considered potentially as cytotoxic (Meyer,1982),

Table 3. Results of phytochemical screening of crude ethanol extracts of (*Benincasa hispida* Thunb. Cogn) seeds

Phytochemicals	<i>B. hispida</i> Seeds
Alkaloids	(+)
Flavonoids	(+)
Saponins	(-)
Terpenoids	(+)
Tannins	(-)

The results of the phytochemical screening of Beligo (*Benincasa hispida* Thunb. Cogn) seeds extract showed the presence of alkaloids, flavonoids and terpenoids. Other secondary metabolites such as saponins and tannins were absent in the ethanol extract.

Table 2. Observation result and data analysis of cytotoxic activity of *Benincasa hispida* Thunb. Cogn seeds extract toward *Artemia salina* Leach Larvae after 24 hours treatment

Concentration (ppm)	Log of the concentrations	larvae mortality			% Mortality	Probits of Mortality
		1	2	3		
1000	3	10	10	10	90%	6,28
100	2	10	10	8	83,33 %	5,95
10	1	8	6	6	56,67%	5,18
1	0	4	5	4	33,33%	4,56
Control (-)		1	1	1		
Regression equation		y = 0,593 x + 4.603, R2 = 0,978				
LC50 Value		4,666 ppm				

CONCLUSIONS

Based on research results and discussion, hence we can conclude that of *Benincasa hispida* Thunb. Cogn seeds extract has antioxidant 54,987 ppm of IC₅₀ value, cytotoxic activity 4,666 ppm of LC₅₀ value and Phytochemical screening showed positive results for flavonoids, terpenoids, and alkaloids

REFERENCES

1. Amudha, M. and Rani, S. *Evaluation of In Vitro Antioxidant Potential of Cordia retusa*. Indian J. Pharm Sci. 2016 Jan-Feb; 78(1): 80-86
2. Badhani S, Kainth A, Kabra A, Parashar B. *Evaluation of Antioxidant Activity of Benincasa hispida Fruit Extracts*. American Journal of PharmTech Research. 2013.
3. Cheeseman KH, Slater TF. *An introduction to free radicals chemistry*. Br Med Bull. 1993;49:481-93
4. Farnsworth, N. R. (1966). Biological and phytochemical screening of plants. *Journal of Pharmaceutical Sciences*. 55: 225-276.
5. Ghosal, M. & Mandal, P. (2012). Phytochemical screening and antioxidant activities of two selected 'Bihari' fruits used as vegetables in Darjeeling Himalaya. *International Journal of Pharmacy and Pharmaceutical Sciences*. ISSN : 0975-1491. 4(2).
6. Huang DJ, Ou BX, Prior RL. The chemistry behind antioxidant capacity assays. *J Agric Food Chem* 2005;53:1841-56.
7. Kedare SB, Singh RP. Genesis and development of DPPH method of antioxidant assay. *J Food Sci Technol* 2011;48:412-22.
8. Mandana, B, Russly AR, Farah ST, Noranizan MA, Zaidul IS and Ali G. *Antioxidant activity of winter melon (Benincasa Hispida) seeds using Conventional Soxhlet Extraction technique*. *International Food Research Journal* 2012;19(1): 229-234.
9. Mensor LL, Menezes FS, Leitão GG, Reis AS, dos Santos TC, Coube CS, et al. *Screening of Brazilian plant extracts for antioxidant activity by the use of DPPH free radical method*. *Phytother Res*. 2001;15:127-30
10. Meyer, B.N., Ferrigini, R.N., Putnam, J.E., Jacobsen, L.B., Nichols, D.E., McLaughlin, J.L. (1982) Brine shrimp: A convenient general bioassay for active plant constituents. *Planta Medica* 45, 31-35.
11. Mojab, F., Kamalinejad, M., Ghaderi, N., & Vahidipour, H. R. (2003). Phytochemical screening of some species of Iranian plants. *Iranian Journal of Pharmaceutical Research*. pp. 77-82.
12. Percival, M. *Antioxidants*. *Clinical Nutrition Insights*. 1998
13. Sies, H. et al., *Antioxidant Function of Vitamins*. *Ann NY Acad Sci* 1992;669:7-20.
14. Zaini NAM, Anwar F, Abdul Hamid A and Saari N. *Kundur [Benincasa hispida (Thunb.) Cogn.]: A potential source for valuable nutrients and functional foods*. *Food Res Int* 2011; 44:2368-2376.