



INTERNATIONAL CONFERENCE ON OPERATIONS RESEARCH (ICOR)

4th

Policies and Optimal Decisions on Energy and Environment

Sam Ratulangi University, Manado, Indonesia
19 - 20 September 2019

GENERAL AGENDA & PARALLEL SESSION SCHEDULE



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GENERAL AGENDA
The 4th INTERNATIONAL CONFERENCE ON OPERATIONS RESEARCH
“Policies and Optimal Decisions on Energy and Environment”
MANADO, 19 SEPTEMBER 2019

TIME START (Indonesia Central Standard Time)	ACTIVITIES	VENUE
07.30	Registration	
<i>Opening Ceremony</i>		
08.30	VIP Entry Procession	<i>Auditorium</i>
	Welcoming and Theme Performance: Energy Dance	
	National Anthem: Indonesia Raya	
	Prayer	
	Environment in Industrial Era 4.0	
09.00	Introductory Speech by the President of IORA: Prof. Dr. Sudradjat Supian	
	Opening Speech: Rector of Sam Ratulangi University Prof. Dr. Ir. Ellen Joan Kumaat, M.Sc, DEA	
	Keynote Speech: Dirjen Konservasi Sumber Daya Alam dan Ekosistem, Kementerian Lingkungan Hidup dan Kehutanan	
	Thank you Note: Conference Chairman Dr. Nelson Nainggolan, M.Si	
09.55	Photo Session	
10.05	Line Dance	
10.15	Coffee Break / Poster Session / Exhibition	
10.30	Plenary Speeches: - Prof. Dr. Heike Waegele (Alexander Koenig – Leibniz Institute, Germany) - Dr. Prasad Kaparaju (Griffith University, Australia) - Prof. Dr. Seiya Negami (Yokohama National University, Japan) - Prof. Dr. Abdul Talib Bon, PhD (Universiti Tun Hussein Onn, Malaysia)	
12.15	Lunch	<i>Fakultas MIPA UNSRAT</i>
13.00	To Linow Lake	<i>On the way</i>
14.15	Parallel Sessions	<i>Linow Lake</i>
17.30	Back to Manado	<i>On the way</i>

PARALLEL SESSION CLASSES

Thursday, 19th September 2019

CLASS : LOKON

Nr.	Authors	Title
1	Christian A. Lombogia Max Tulung Jimmy Posangi Hard N. Pollo Trina E. Tallei	Genetic Variations of DNA Barcode Region of <i>Apis nigrocincta</i> (Hymenoptera: Apidae)
2	Marina Silalahi	<i>Morinda citrifolia</i> (Utilization and Bioactivity)
3	Rafdinal Ramadhanil Pitopang	Decomposition Rate and Litterfall Dynamics of Tembawang Agroforestry Area, West Kalimantan, Indonesia
4	Mokosuli Y. Semuel Revolson A. Mege Gianny Versya Christny Rompas	Antihyperlipidemic activity of <i>Apis dorsata</i> Binghami nesting extract in atherogenic diet-induced hyperlipidemic rats
5	Ernest Hanny Sakul Jacklin Stella Salome Manoppo	The Efficacy Of Bio-Insecticides Derived From Four Minahasa Plant Extracts To Control The <i>Spodoptera Exigua</i> (Hübner) (Lepidoptera:Noctuidea) IN Tonsea Lama Village, North Sulawesi, Indonesia
6	Kawilarang W. A. Masengi I.U. Ali L. Manu B. Pinontoan I.F. Mandagi A. Luasunaung A. Thamin A. W. R. Masengi S. Timbowo D. P. Pandara G. H. Tamuntuan A. Angmalisang E.I. KG. Masengi N. Zebua A. Lawelle F. Wongkar J. Tumbal H. Kobayashi J. Montenegro M. Iwata K. Yamahira	Study On Some Physical Oceanography Aspects Of The COELACANTH 'S (<i>Latimeria menadoensis</i>) Habitat At Manado Bay Of North Sulawesi
7	Hurip Pratomo	<i>Eurycoma longifolia</i> 's Function To Increase Mature Spermatids Formation Inside Seminiferous Tubules Of White Rat.
8	Yosevita.Th.Latupapua C.K. Pattinasarany Jhon Sahusilawane	Analysis of Diversity and Distribution of Bird Animals as Birdwatching Ecotourism Objects in Manusela National Park Area In North Seram District, Central Maluku Regency, Maluku
9	Sasube,L.M A.H.Luntungan	The Relationship among Nutrition Knowledge, Vegetables diet and Nutritional Status of Elementary Students at Don Bosco Catholic School Manado- North Sulawesi

Nr.	Authors	Title
10	Trina E. Tallei Johanis J. Pelealu Beivy J. Kolondam Lianda Lubis	A molecular phylogeny of <i>Taeniophyllum</i> THRJ inferred from DNA barcode regions
11	Henny V.G. Makal Max M. Ratulangi Denny S. Sualang	Exploration And Identification Trichoderma Spp. As A Biological Control Agents To Plant Pathogens And Starter Making Biological Fertilizers
12	Rumengan, I.F.M. Kubelaborbir, T.M.Malintoi A.H. Luntungan A. Rondonuwu	Ascidians associated with the symbiont Microbe, Prochloron didemni in Manado Bay, North Sulawesi, Indonesia
13	Elvy Like Ginting Gladys G. Poluan Veibe Warouw Stenly Wullur	Identification of Bacteria symbiont sponge strain of Bacillus sp. with Chitinase Degrading Activity
14	Rosita A.J. Lintang Deiske A. Sumilat Esry T. Opa	Antibacterial Activity of PvBa-RL8 Isolate, Bacterium Associated with Nudibranchia Phyllidia varicosa

CLASS : MAHAWU

Nr.	Authors	Title
1	Fitria Fresty Lungari Ishak Bawias	Technology Evaluation (Humanware) of the Fishing Industry in Tahuna Bay, Sangihe (Case Study: Outrigger Boat Fishermen)
2	Sanger G Rarung L.K Assa Y. Kaseger B.E.	Antioxidant Capacity And Alpha Glucosidase Inhibitory Activity Of Ethyl Acetic Extract Edible Marine Algae (<i>Halimenea Durvillae</i>).
3	Joudy R.R. Sangari Grevo S. Gerung Unstain N. Rembet Ridwan Lasabuda	Socio-Ecological System (SES) of Small-Scale Crab Fisheries Cluster in South Minahasa Regency, North Sulawesi
4	Sanusi Gugule Chaleb Paul Maanari Feti Fatimah Djefri Tani	Synthesis and Characterization of Biodiesel from Virgin Coconut Oil (VCO)
5	A Armid R Shinjo Takwir A R Ruslan	Spatial Distribution and Pollution Assessment of Heavy Metals Pb, Cu, Ni, Fe and As in the Surface Seawater of Starring Bay, Indonesia
6	Feny Mentang S. Berhimpon Henny A. Dien Kristhina P. Rahael Nurmeilita Taher Ayub U.I Meko Roike I. Montolalu	Effect Of Concentration Of Collagen Skin Fish Extraction As An Edible Coating On Sensory Properties Of Smoked Fish Nugget And Fish Stick.



Certificate



is awarded to

GRACE SANGER

as

PRESENTER

The 4th INTERNATIONAL CONFERENCE ON OPERATIONS RESEARCH 2019

Theme:

"Policies and Optimal Decisions on Energy and Environment"
Which was Held at Faculty of Mathematics and Natural Sciences, Sam Ratulangi University - Manado

19-20 September 2019

President of IORA

Chairman of The Committee



Prof. Dr. H. Sudradjat Supian, M.Sc.

Dean of Faculty of Mathematics and
Natural Sciences, Sam Ratulangi University




[Signature]

Dr. Benny Pinontoan, M.Sc.



Dr. Nelson Naingolan, M.Si.





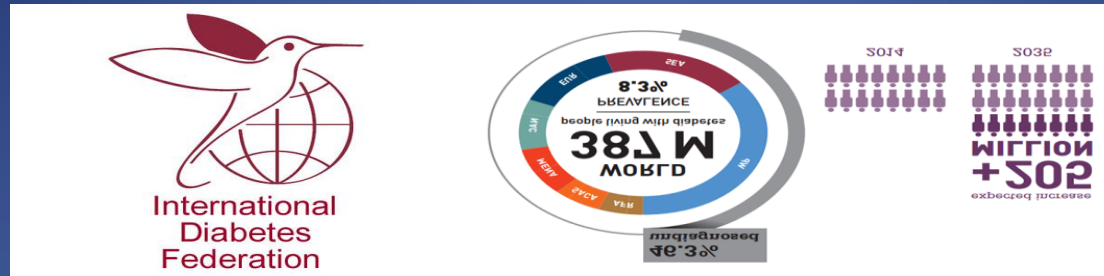
**ANTIOXIDANT AND ANTIDIABETIC ACTIVITY OF
ETHYL ACETIC EXTRACT ON EDIBLE MARINE
ALGAE (*Halymenia durvilae*) COLLECTED FROM
NORTH SULAWESI COASTAL AREA OF INDONESIA**

Authors:

**Sanger G*., Rarung L.K*, Lena Damongilala,
Montolalu L.A.D.Y**

**Faculty Of Fishery And Marine Science, Sam
Ratulangi University, MANADO 95115**

Introduction



The incidence of diabetes is increasingly at an alarm rate due to changes in modern lifestyles. The International Diabetes Federation estimates that 387 million people live with diabetes around the world in 2014 and that number is estimated to grow to nearly 600 million by 2035.

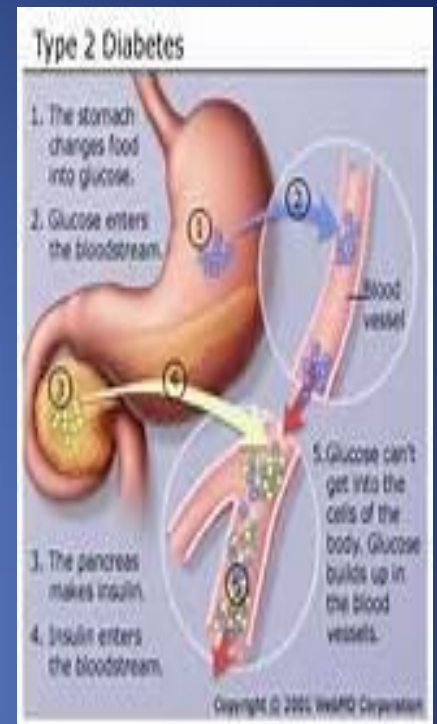
There were 9.1 million cases of diabetes in Indonesia in 2014. It also has the fifth largest number of diabetic patients. According to WHO data, the prevalence of type 2 diabetes mellitus (T2 DM) in Indonesia will be increasing 14.1 million in year 2035. (Cho, 2014).

The recent approach for controlling postprandial hyperglycemia is to inhibit the carbohydrate hydrolyzing enzymes such as α -amylase dan α -glucosidase in the digestive system. The commercially available **synthetic antidiabetic drug include Voglibose and miglitol,**

However many of these synthetic hyperglycemic agents have their own limitation. They are non-specific, produce serious side effects and fail to reduce the diabetic complication. They often cause severe gastrointestinal side effects (Shimabukuro *et al.*, 2009).

-Numerous natural products such as crude extracts and isolated compounds from seaweeds appear to be applicable as antioxidant and anti-diabetes.

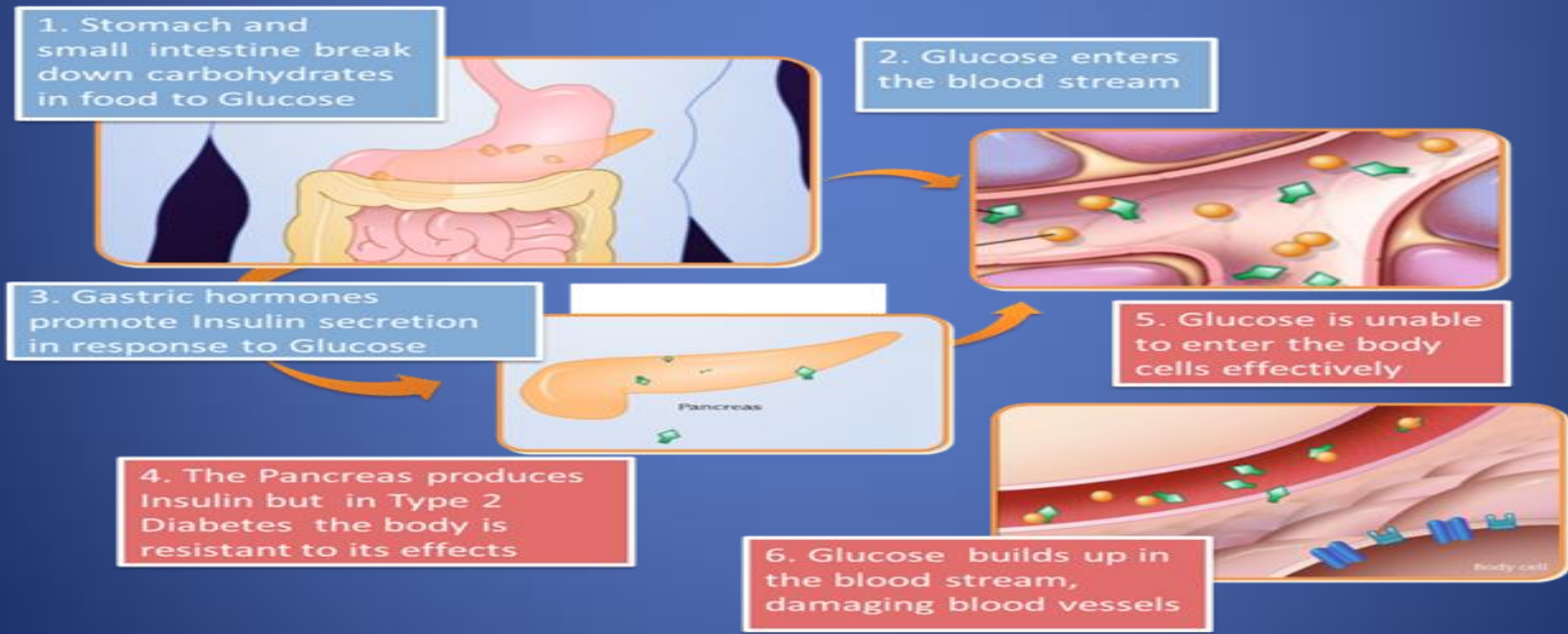
Due to the potentially harmful side effects related with antioxidant and anti-diabetes drugs as long-term treatments, showing of natural sources with reducing minimal side effects has drawn much attention.



Reactive species Oxygen (ROS) is generated in living organism during metabolism. It's produced in form of superoxide anion (O^{2-}), hydroxyl radical ($\bullet OH$), peroxy radical ($ROO\bullet$), hydrogen peroxide ($HOOH$) and nitric oxide radical (NO). ROS damage biological molecules for instant lipids, protein, enzymes, DNA and RNA leading to cell or tissue injury, plays a role in a broad general disease and age-related to degenerative condition.

These consist of cancer, diabetes, stroke, inflammatory condition and neurodegenerative diseases, On the other hand, antioxidant is believed to be defensive because it may help to shelter the human body against damage by ROS.

Diabetes mellitus is a group of chronic diseases, which can be recognized to hyperglycaemia, a situation characterised by an extreme concentration of glucose circulating in the blood, with unsteadiness in carbohydrate, fat and protein metabolism.



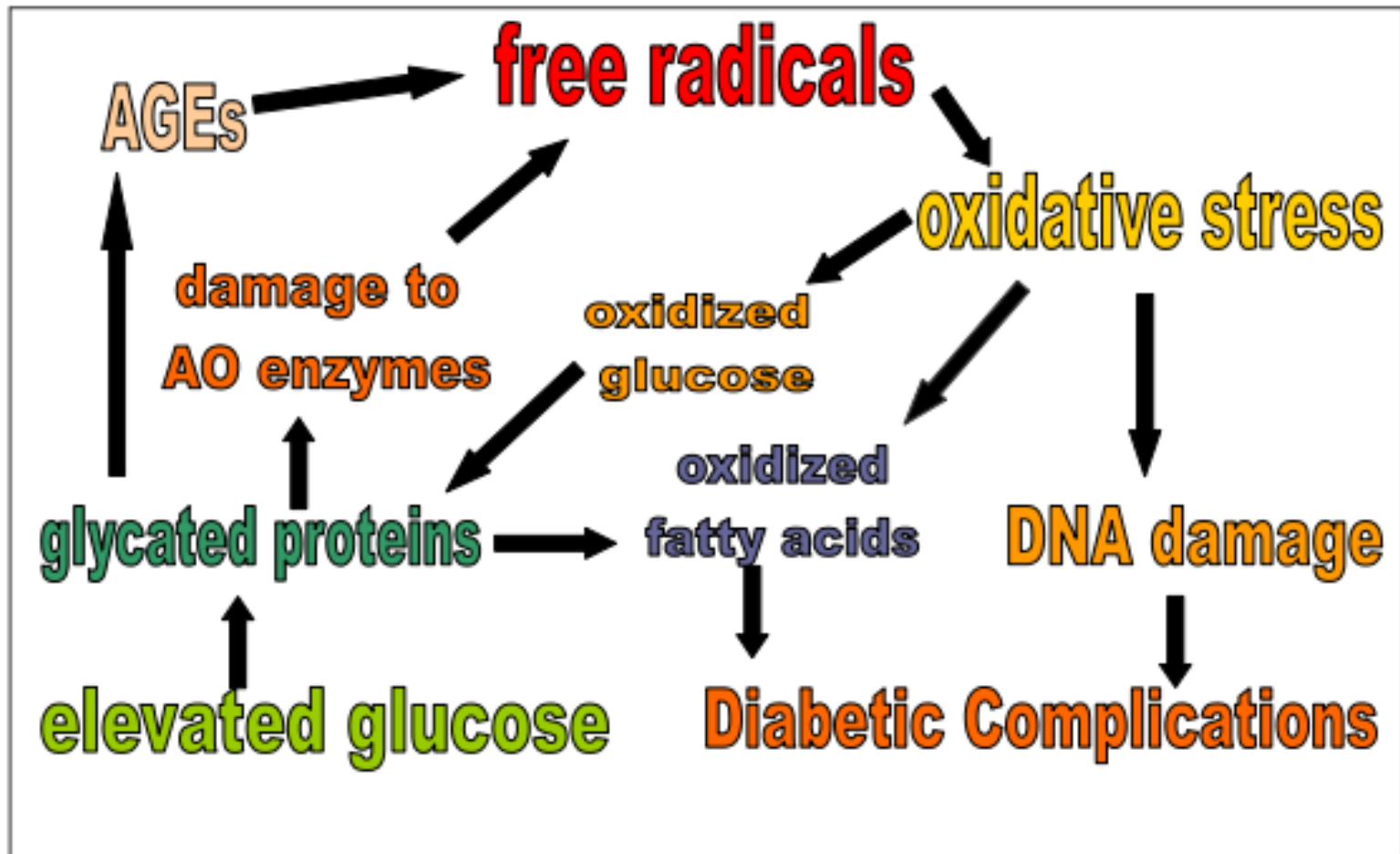
Diabetes mellitus can be categorised into two main forms namely:

- **Type I diabetes mellitus** (T1DM), caused by the absolute nonattendance of insulin production due to auto-immune mediated collapse of pancreatic β -cells, and
- **Type II diabetes mellitus** (T2DM), which is due to the virtual insufficiency of the same hormone concerning insulin resistance, percular synthesis of hepatic glucose and progressive deterioration of pancreatic β -cell functions

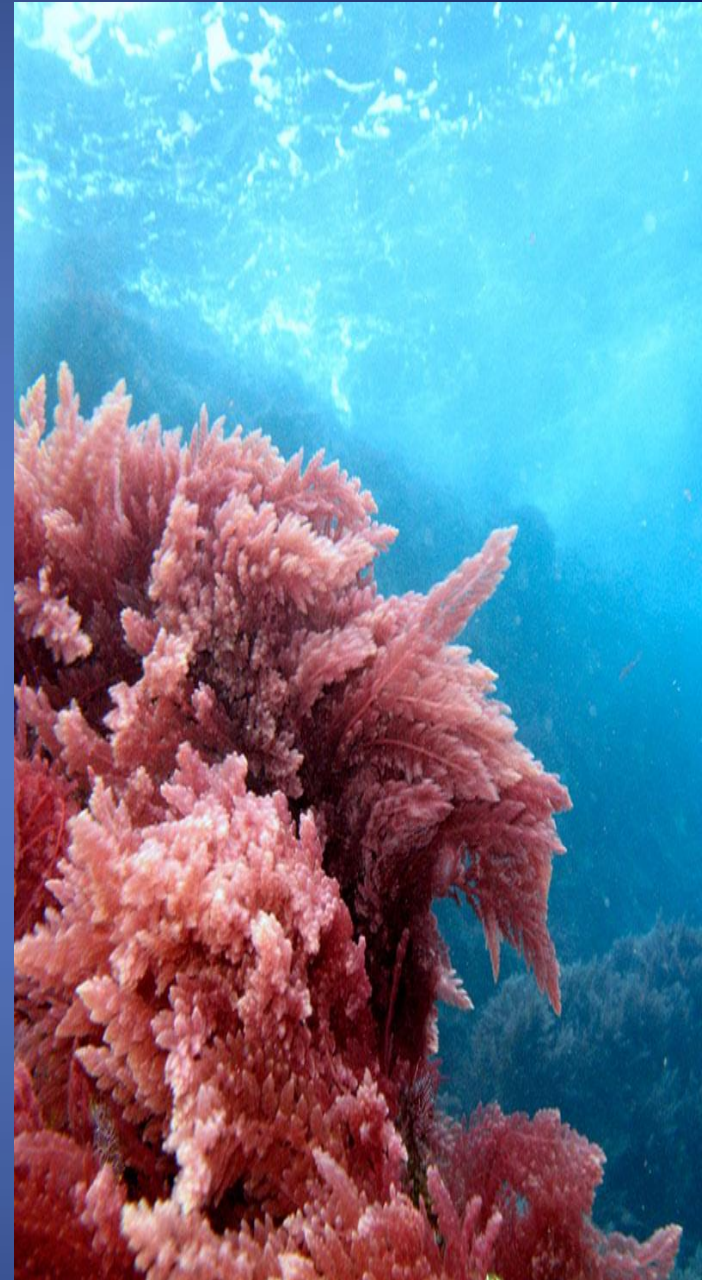


What Causes Diabetes? A number of lifestyle factors are known to contribute to the development of Type 2 Diabetes. Excess weight, defined as a body mass index (BMI) of 25 or more, leading an inactive lifestyle, having abnormal cholesterol and blood lipids, high blood-pressure and smoking are all factors that increase the risk of developing Type 2 Diabetes.

Oxidative Stress and Diabetic Pathology



Seaweeds have been suggested as a promising source of bioactive substance that might have pharmaceutical Application (Nousu *et al.*, 2011). It's source of dietary fiber especially soluble fiber such as alginates which can influence satiety and glucose intake from food.



- Natural products and their derivatives represent more than 50% of all the drugs in clinical use of the world are known to possess antioxidant potential. Thus, potential antioxidant and antidiabetic properties of plant extracts or isolated products of plant origin can possibly be explored for developing the antidiabetic drugs (Boopathy and Kathyresan, 2010)

The objective of this research was to evaluate:

1. Total phenolic content
2. the antioxidant activity (DPPH, FRAP assay and FIC assay).
3. *In vitro* α -glucosidase inhibitory activity of ethyl acetic fraction of *Halimenia durvilae* collected from North Sulawesi coastal area of Indonesia.

2. Metodology

- Freeze fresh sample of seaweeds extracted using 70% methanol (1/2, w/v) The extract obtained was fractionated using ethyl acetic.
- The extract and fractions storage at -20°C for future analysis.

Chemicals and reagents

- 1,1-diphenyl-2-picrylhydrazyl (DPPH) was purchased from Sigma Aldrich, Ferrozin iron reagent, Follin-Ciocalteu's phenol, sodium carbonate (Na_2CO_3), methanol, potassium dihydrogen phosphate (KH_2PO_4), iron (III) chloride-6-hydrate (FeCl_3), Trichloroacetic acid (TCA) and Potassium ferricyanide $\text{K}_3\text{Fe}(\text{Cn})_6$ purchased from Merk Spanyol.
- α -glukosidase, p -nitrophenil- α -D-glucopyranoside, phosphate buffer, sodium carbonat were purchased from Sigma-Aldrich (St. Loius, MO. USA.) All other solvent and Chemical were analytical grade.

3. Result and Discussion

Tabel 1. TPC, FRAP, FIC and DPPH of *H.durvilae*

Parameter	Value
TPC	11.55± 7.50 mg GAE/100 g
FRAP	35.27± 0.93 uM Fe ²⁺ mg ⁻¹ extract.
FIC (IC ₅₀)	31.52 ± 2,903 mg/ml
DPPH (IC ₅₀)	11.95 ± 0.34 mg/ml
BHT(IC ₅₀)	0.1467 mg/mL

Antidiabetic Activity

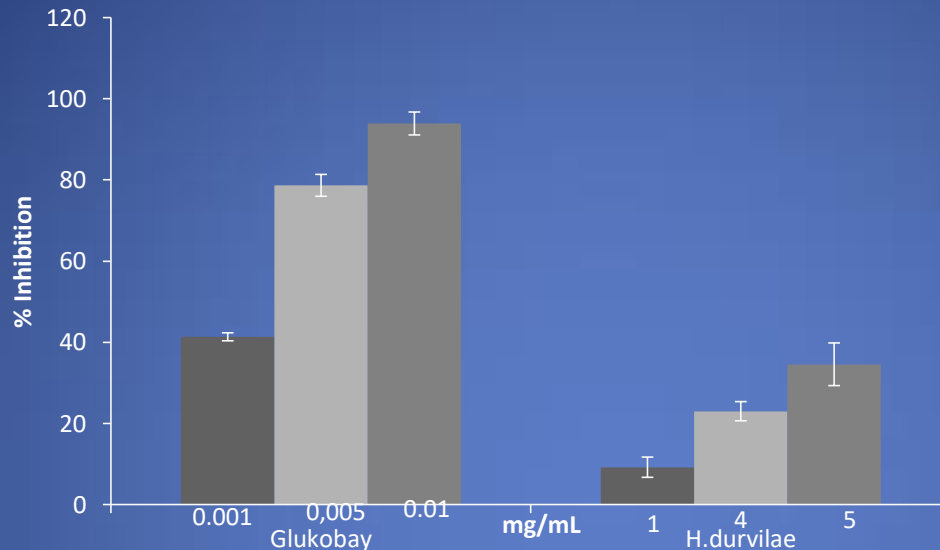


Fig. 2. α -glukosidase inhibition activity of *H.durvilae*

- The α -glucosidase inhibition effectiveness of extracts were compared on the basis of their % inhibition (IC_{50} 8.05 ± 0.43 mg/ml) and the control positif of glucobay was IC_{50} 0.0011 mg/mL

The extract and its fraction were found to possess α -glucosidase inhibitory effect on starch break down *in vitro*. The α -glucosidase effectiveness of extract and fraction were compared on the basis of their % inhibition (1-5 mg/ml).

Many natural resources have been reported for their antioxidant and antidiabetic activities for treatment of diabetes. Polyphenols from edible seaweeds have also been suggested to influence responses relevant to diabetes through modulation of glucose induced oxidative stress, as well as through inhibition of starch-digestive enzymes (Lee *et al.*, 2010).

- Red seaweeds of the family Rhodomelaceae contains bromophenols with α -glucosidase activity; one of the family Rhodomelaceae bears a 3,4- dihydroxybenzyl skeleton (Senthil *et al.*, 2013). Kim *et al.*, 2009 reported the α -glucosidase and α -amylase inhibitor bromophenol C_6H_5BrO is produced by red algae *Polyopes lancifolia* and *Grateloupia elliptica* without toxic effect.

- Diabetic complications may also be explained by increases in DNA damage due to oxidative stress. DNA damage was measured in 10 normal and 10 diabetic patients. A significant elevation in DNA strand breaks and oxidized pyrimidines was seen in patients with Type I diabetes compared with normal subjects. Altered purines showed a strong positive correlation with blood glucose level (Collins et al. 1998).

- Glycation of proteins leading to the accumulation of advanced glycation end products (AGEs) is known to be one of the sources of free radicals and has been strongly linked to the presence of diabetic complications (McCance et al. 1993). These glycation products may directly release superoxide radical and H₂O₂, activate phagocytes, and reduce glutathione levels (Gutteridge and Halliwell, 1999)

4. CONCLUSION

- This study is a preliminary report on antidiabetic properties of seaweeds *H. durvillae*. The *in vitro* α -glucosidase activity of ethyl acetic showed good result, in inhibition of diabetic. Therefore edible seaweed *H.durvillae* could be used as dietary food source of natural antidiabetic agent. In future isolation of ethyl acetic extract of *H. durvillae* need be performed to know the bioactive compound that function as antidiabetic.

Thank you

