

DAAD Alumni meeting
26th – 28th May 2017 in Hanoi

Real situation of polluted environment and unsafe food link to cancer hazard in Vietnam



Dr. Nguyen Thi Thai An
30/4 Hospital – Ho Chi Minh city

Cancer Burden Annually In Vietnam

- VN is worst countries of death rates due to cancer
- Annually average increase of **20%** for cancer patients (**>73%** of cancer patients die)
- estimated in 2020 will be **190,000** new cases/year
- **80%** of cancer cause in VN are attributed to outside factors: pollution, unsafe food, toxic work environments



The relationship between pollution and unsafe food with cancer



Cancer directly related to :

- bad eating/drinking habits and unsafe food
- air pollution, water pollution
- infection (HBV, HCV, HPV, HP...)



Vietnam is a rapidly developing country
with over **95 million people**

*deforestation, motorbikes/ trafic,
poor urban planning.. have caused **air pollution***



Severe air pollution in Hanoi/ HCM city/ urban

>1000 coal fires/day in Hanoi



Smoke (waste incineration, traffic, industrial activities...)



**CO, SO₂, NO₂, O₃
PM2.5, PM10, PAHs**
- destroy DNA structure
- breast cancer, lung cancer



>70 cars and 700 motorbikes/1km of road in city

Water pollution

Untreated waste water released by industries, agriculture, home activities



- Cancer-causing in water may include lead, mercury, chlorine, aluminium, **arsenic** contamination in the drinking water (for consumption) or irrigate rice/vegetable farms
- High concentration of **various toxins** in the river/lake/sea: Formosa Ha tinh catastrophe, illicit waste, organic pollutants (oil waste and solids): these compounds can be accumulate and cause **cell mutations** -> high risk of **stomach and colon cancer**

Lung cancer is often association with smoking and air pollution

Risk Factors



**SMOKING
CIGARETTES**



**ENVIRONMENTAL
TOBACCO EXPOSURE**



PRIOR RADIATION
in the chest area



ASBESTOS
a toxic chemical



**OTHER LUNG
DISEASES**



RADON
a radioactive gas
found in soil

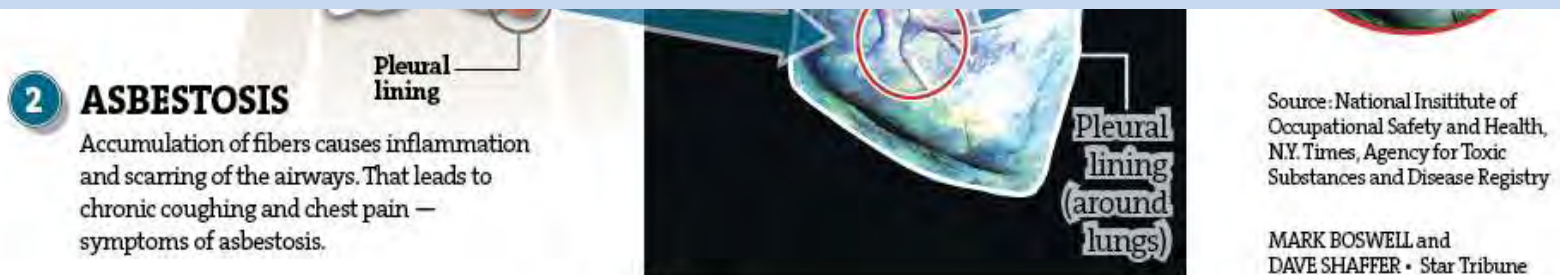
GENETICS



VN consumes > 80 billion cigarettes / years

Asbestos is an important cause of lung cancer and mesothelioma

- VN is one of the top 10 countries asbestos consuming
- Annually import 65,000 tons of asbestos raw material
- A lot asbestos containing products are still using in VN
- **90%** lymphoma/ leukemia children contacted to building materials/ toys/ products using asbestos



Unsafe food as the major cause of cancer



Pork become Beef ?!!



Milk
Melamine



banned substances



banned chemicals,
pesticide



Auramin to dye food



Industrial chemicals
for food processing



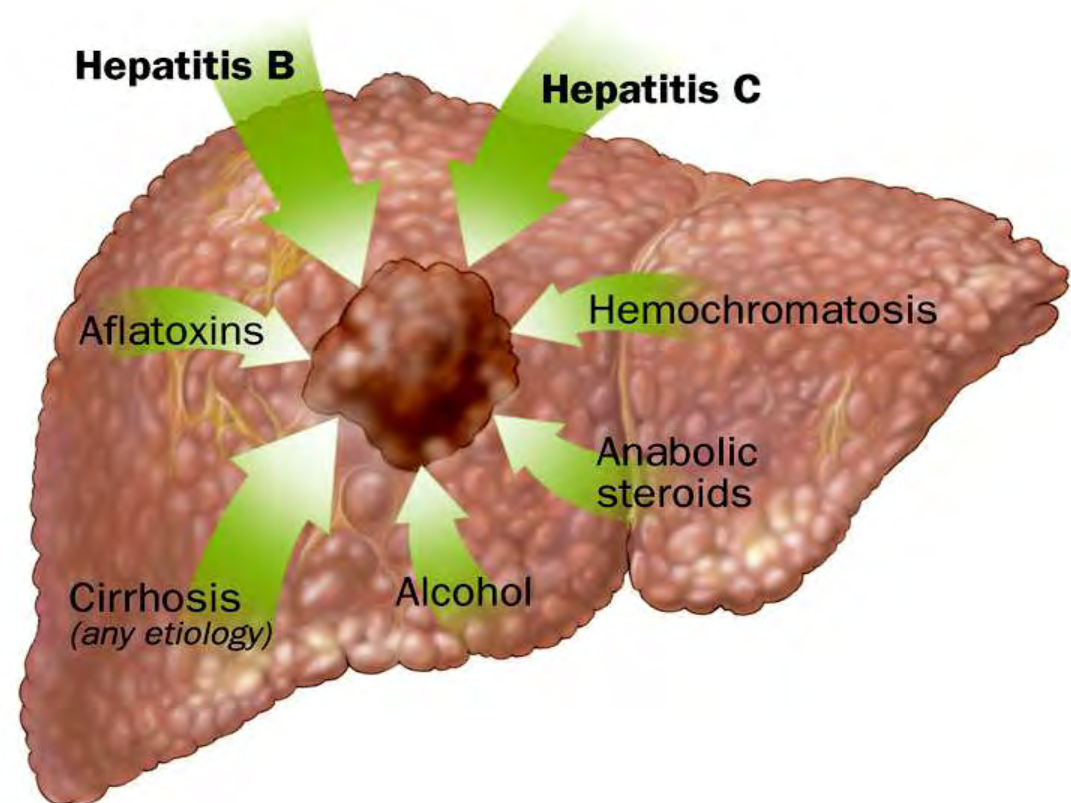
High risks of liver cancer



- Eating moldy food/ aflatoxin contaminated
- Handling/ processing of contaminated crops and feeds



10 - 16.5% VN population have HBV infection and 3 % HCV infection



Consumption $> 700 \times 10^6$ liters of alcohol (200 M liters is not quality control) and 3.8×10^9 liters of beer / year

Aflatoxin mold chopping board

**30-50% of all cancers are related to eating/drinking habits
(5-10% genetic factors)**



Smoke heavily and drink alcohol frequently



Eating meals full of dried and salty food



Eating fried, grilled dishes with fatty oil



Dưa chua muối chưa kỹ

- Toxic chemicals using for food processing (make whitening, coloring, freshing, softness and elasticity or create the eye-catching)
- Antibiotics and banned substances for farming, for food preservation and processing



How to reduce cancer burden in VN

- Protect our environment (government and individual duty)
- Change lifestyle (healthy food, exercise, good habits...)
- Ensure food safety (not buying and selling goods at the mobile markets) need foods inspect strictly
- Cancer screening regularly for early diagnosis .



Thống nhất _ village of cancer



Ung buou Hospital in HCM city



DAAD Regional Alumni Meeting, 26th – 28th,
Hanoi, Vietnam



University of Yangon

Department of Chemistry



The Changes of Nutritional Values During Artificial Ripening of Banana (Musa spp) in Myanmar

Dr Myat Myat Thaw

Professor

Chemistry Department

University of Yangon

Email dr.myat.myat.thaw@gmail.com



27-5-2017

Aim

- ❖ To investigate the changes of nutritional values during artificial ripening of Banana (*Musa spp*) in Myanmar

Objectives

- ❖ To present the use of artificial ripening agents in fruits
- ❖ To assess the changes of nutritional values in fruits



Botanical Description of Banana

Scientific name : *Musa paradisiaca*

Genus : *Musa*

Species : *paradisiaca*

Family name : Musaceae

English name : Banana

Myanmar name : Phee-gyan-hnget-pyaw

Distribution : tropical and sub-tropical regions of the world



Different Names of Ripening Agent

- **ethephon**
- artificial ethylene
- ethylene glycol
- calcium carbide
- carbon monoxide
- potassium sulfate
- oxytocin



ethephon

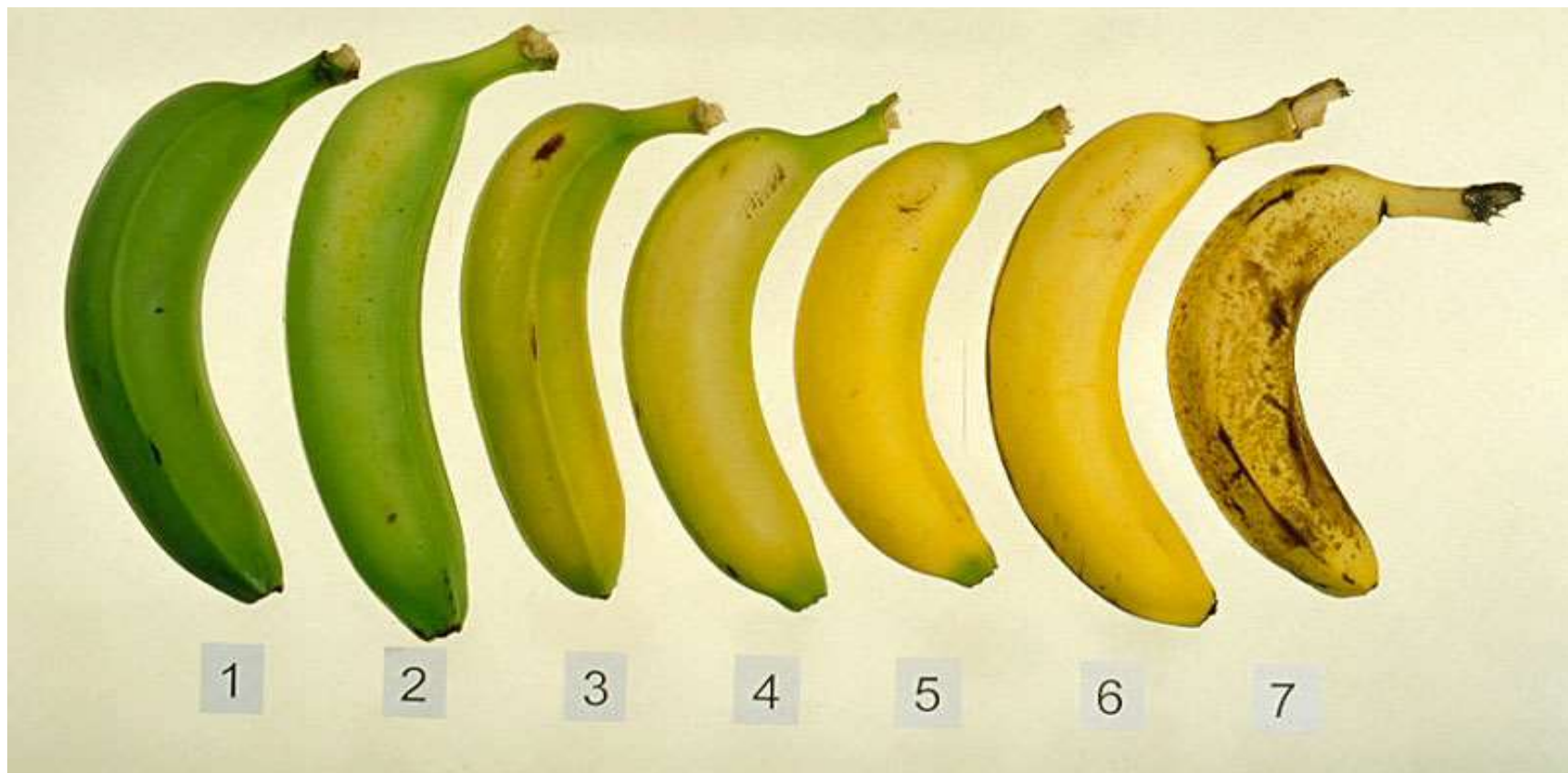
CHINESE ×

乙烯利有效成分含量：40% 剂型：水剂低毒S生产企业名称：上海华谊集团华原化工有限公司
浦化工厂地址：上海市金山区华通路200号邮编：201512电话：021-56942167传真021-36351652网
址www.shhuayuan.com物生长调节剂

ENGLISH ☆

Ethephon active ingredient content: 40% formulations: agent toxicity S Manufacturer Name: Shanghai Huayi Group Co., Ltd. Pu Hua Chemical Industry Chemical Plant Address: Jinshan District of Shanghai Hua passage 200 Zip Code: 201512 Tel: 021-56942167 Fax: 021-36351652 website www.shhuayuan.com growth regulator

It was not carcinogen and is classified by IARC(International Agency for Research on Cancer) as group D (not carcinogenic to human).



1. Before treating, finger is hard and completely green

2. After treating for one day, green but with some traces of yellow

3. After treating for two days, become to be yellow

4. After treating for three days, more yellow than green

5. After treating for four days, yellow but with traces of green

6 After treating for five days, fully yellow

7. After treating for six days, yellow with black spots

Some Physicochemical Properties of Banana Samples

Sample	Water (%)	Ash (%)	Protein (%)	Fiber (%)	Fat (%)	Carbohydrate (%)	Energy value (kcal/100g)	Reducing sugar (%)	Titrateable acidity (%)	pH value	Ascorbic acid ¹ (mg/100g)	Ascorbic acid ² (mg/100g)
Natural	70.69 ± 0.03	1.21 ± 0.02	1.18 ± 0.02	0.33 ± 0.01	0.05 ± 0.02	26.54 ± 0.07	111.33 ± 0.18	13.59 ± 0.02	0.35 ± 0.02	4.62 ± 0.01	12.67 ± 0.02	13.12 ± 0.01
250 ppm (ethephon)	72.06 ± 0.02	0.96 ± 0.01	1.09 ± 0.03	0.31 ± 0.02	0.03 ± 0.01	25.55 ± 0.04	106.33 ± 0.06	13.02 ± 0.03	0.40 ± 0.01	4.59 ± 0.01	9.45 ± 0.01	9.66 ± 0.01
500 ppm (ethephon)	72.88 ± 0.01	0.91 ± 0.02	0.98 ± 0.02	0.31 ± 0.02	0.03 ± 0.01	24.89 ± 0.01	103.75 ± 0.02	13.69 ± 0.02	0.43 ± 0.02	4.52 ± 0.02	8.44 ± 0.01	8.86 ± 0.01
1000 ppm (ethephon)	73.90 ± 0.02	0.91 ± 0.02	0.97 ± 0.02	0.30 ± 0.02	0.03 ± 0.01	23.89 ± 0.03	99.71 ± 0.21	14.07 ± 0.03	0.48 ± 0.02	4.46 ± 0.01	6.51 ± 0.01	7.17 ± 0.01
Market	73.66 ± 0.02	0.86 ± 0.01	0.91 ± 0.01	0.30 ± 0.02	0.02 ± 0.01	24.25 ± 0.02	100.82 ± 0.05	14.44 ± 0.02	0.46 ± 0.01	4.37 ± 0.02	6.78 ± 0.02	6.22 ± 0.02

¹ = Iodometric titration method

² = UV–visible spectrophotometric method

Comparison of Mineral Contents in Natural, Treated with Ethephon and Market Samples

Sample		Mineral Contents (mg/100 g)									
		K	Na	Ca	Mg	Fe	Mn	Zn	Cu	Cd	Pb
Natural		420.31 ±0.02	7.38 ±0.01	29.31 ±0.01	76.21 ±0.01	0.84 ±0.01	0.32 ±0.02	0.41 ±0.01	0.17 ±0.01	N.D	N.D
250 ppm (ethephon)		418.23 ±0.01	6.54 ±0.02	27.55 ±0.03	75.91 ±0.01	0.79 ±0.02	0.29 ±0.02	0.38 ±0.03	0.15 ±0.01	N.D	N.D
500 ppm (ethephon)		410.91 ±0.01	5.73 ±0.01	26.10 ±0.02	75.04 ±0.02	0.79 ±0.02	0.27 ±0.02	0.33 ±0.03	0.12 ±0.02	N.D	N.D
1000 ppm (ethephon)		409.75 ±0.01	5.54 ±0.01	26.06 ±0.02	74.91 ±0.02	0.74 ±0.01	0.26 ±0.02	0.28 ±0.02	0.12 ±0.01	N.D	N.D
Market		394.81 ±0.01	3.95 ±0.03	20.29 ±0.02	74.63 ±0.03	0.72 ±0.01	0.24 ±0.02	0.20 ±0.02	0.08 ±0.02	N.D	N.D
RDA*	Men	4700 mg	1500 mg	1000 mg	420 mg	8 mg	2.3 mg	11 mg	900 µg	-	-
	Women	4700 mg	1500 mg	1000 mg	320 mg	18 mg	1.8 mg	8 mg	900 µg	-	-

N.D = not detected, RDA = recommended dietary allowance

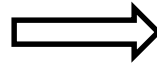
* = Dickinson, 2002; Wall, 2006

Conclusion

From the determination of nutritional values on the effect of ripening agents (ethephon) in banana (Phee-gyan-hnget-pyaw), the following inferences could be deduced.

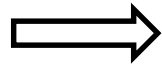
Macronutrients

Water, acidity, reducing sugar



higher in treated
samples than natural (untreated)
ripening sample

Protein, carbohydrate, and
Fiber and energy

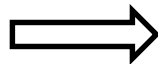


sample

lower in treated samples
than natural (untreated) ripening

Micronutrients

vitamin C and
some elements
natural samples



lower in treated samples than

Observation of Ripening Time and Shelf Life in Natural and Treated with Ethephon Samples

No.	Sample	Ripening time (hours)							Shelf life (days)
		A	B	C	D	E	F	G	
1.	Natural	–	54	64	72	79	86	92	6
2.	250 ppm (ethephon)	–	36	42	48	53	58	63	3
3.	500 ppm (ethephon)	–	29	34	39	44	47	49	2.5
4.	1000 ppm (ethephon)	–	24	27	29	31	33	35	2



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Changes of ripening stage by the treatment of ethephon on Banana



SEA HERBS IN THE PREVENTION OF DEGENERATIVE DISEASES

Kustiariyah Tarman^{1,2}

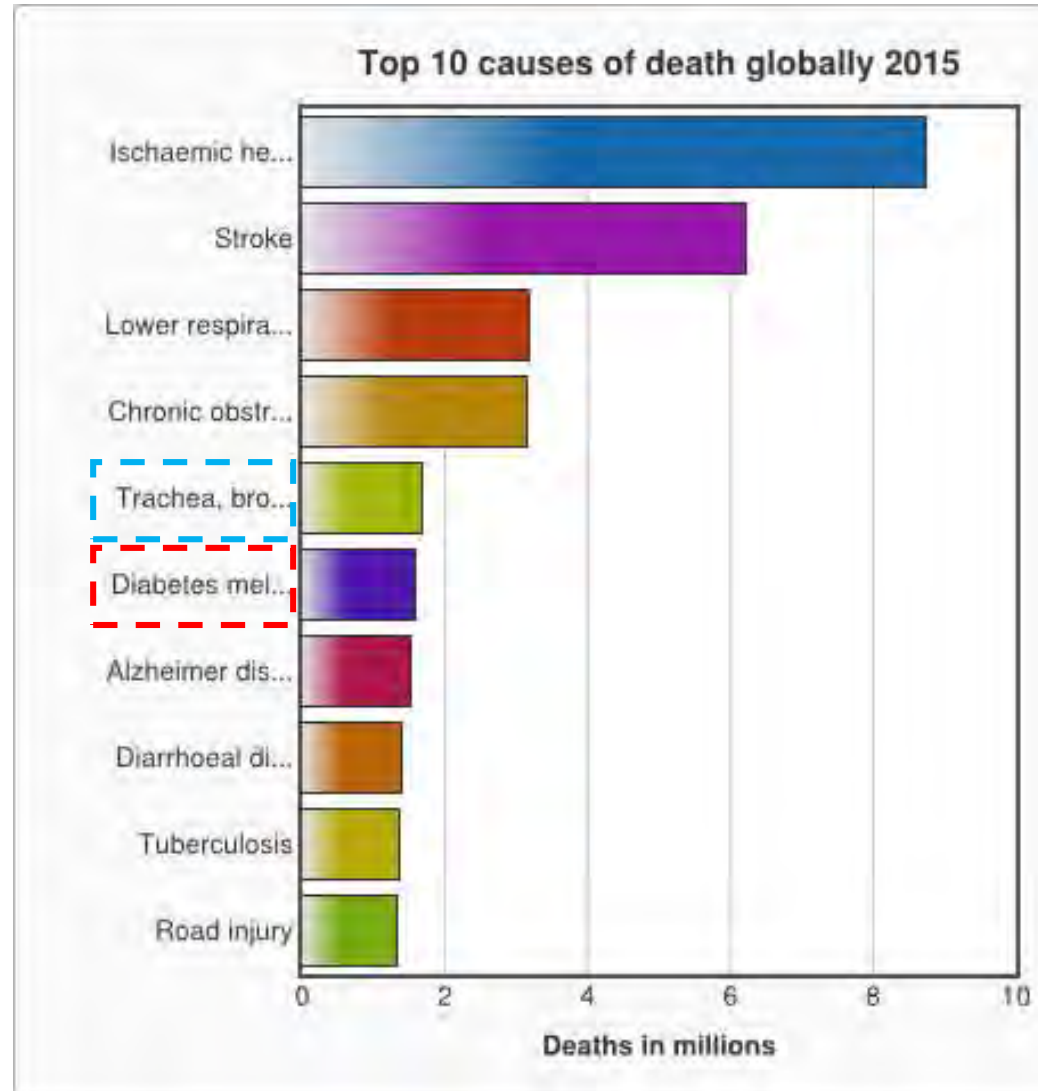
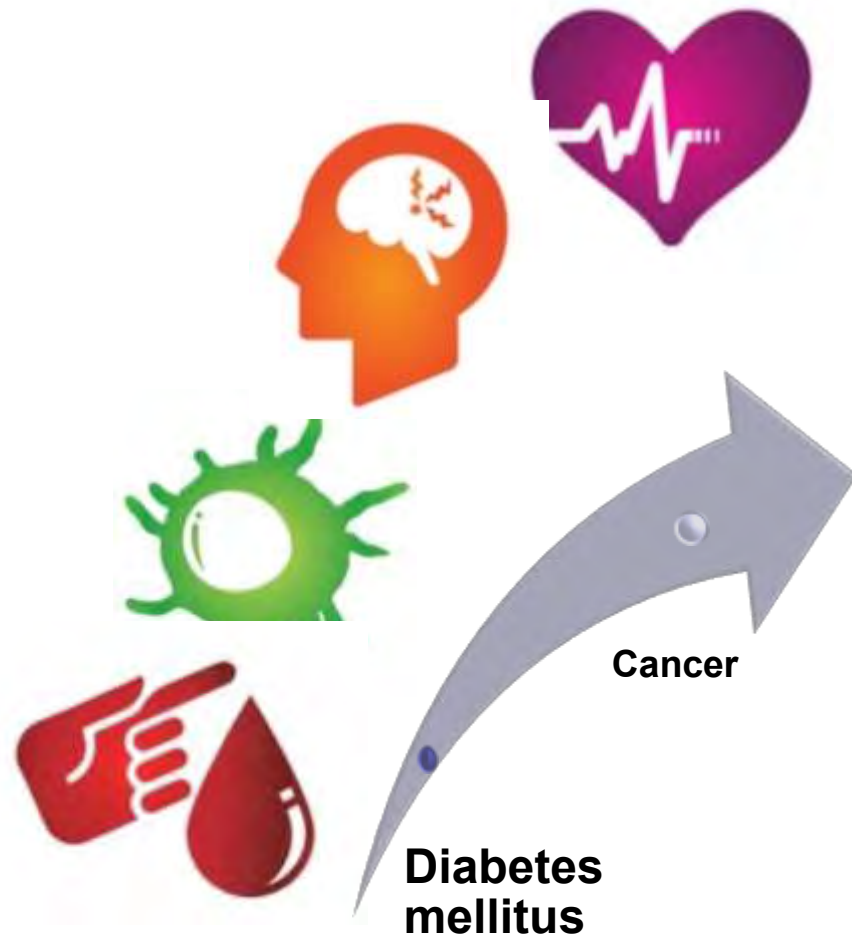
kustiaz@apps.ipb.ac.id kustya@gmail.com

¹ Department of Aquatic Products Technology, Faculty of Fisheries and Marine Sciences, Bogor Agricultural University (IPB)

² Division of Marine Biotechnology, Center for Coastal and Marine Resources Studies, Bogor Agricultural University (IPB)

26-28 May 2017
Hanoi, Vietnam

Degenerative Diseases



WHO (2017)

Sea Herbs

Sea Vegetables, Sea Algae, Seaweeds



AmaLa

Sea Herbs

Sea Vegetables, Sea Algae, Seaweeds

Sulfated polysaccharides

Minerals

Carotenoids

Fatty acids

Vitamins

Dietary fiber

Phenol

Catechin

Flavonoid

Fucoidan

Cellulose

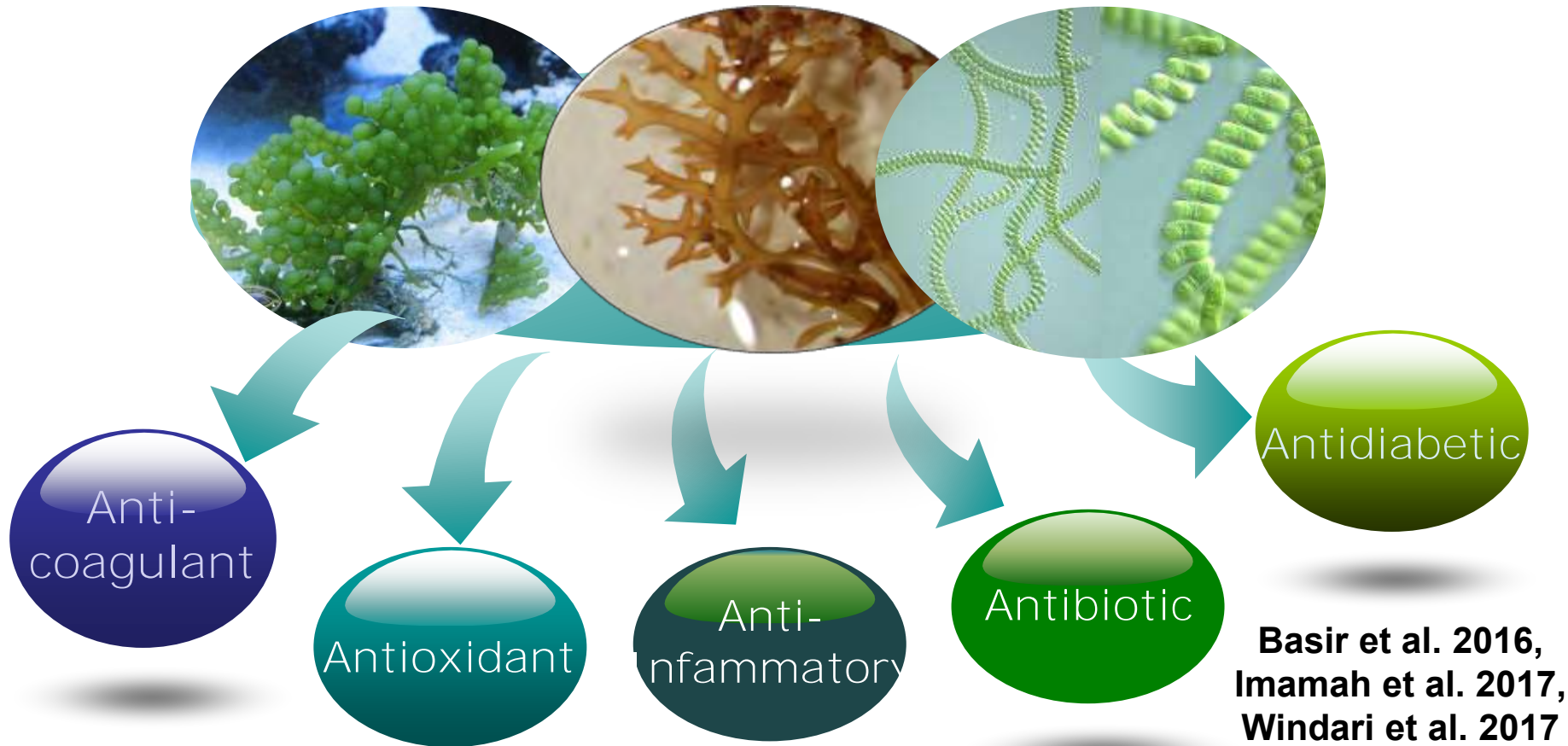
Agarose

Alginic

Carrageenan



Biological Activities



Sea algae as Potential Source of Bioactive Secondary Metabolites



**Marine Biotech Group, FFMS,
Bogor Agricultural Univ.**

Alga-Associated Fungi



Halimeda sp.



Sargassum sp.

Endophytic fungi



- Antibiotic
- Anticancer
- Antiviral
- Immunostimulant
- Enzymes

Macroalgae as Potential Host for Marine Fungi

Tarman et al. 2011, 2012, 2013,
Andhikawati et al. 2014,
Inthe et al. 2014,
Rahaweman et al. 2016,
Saputra et al. 2017



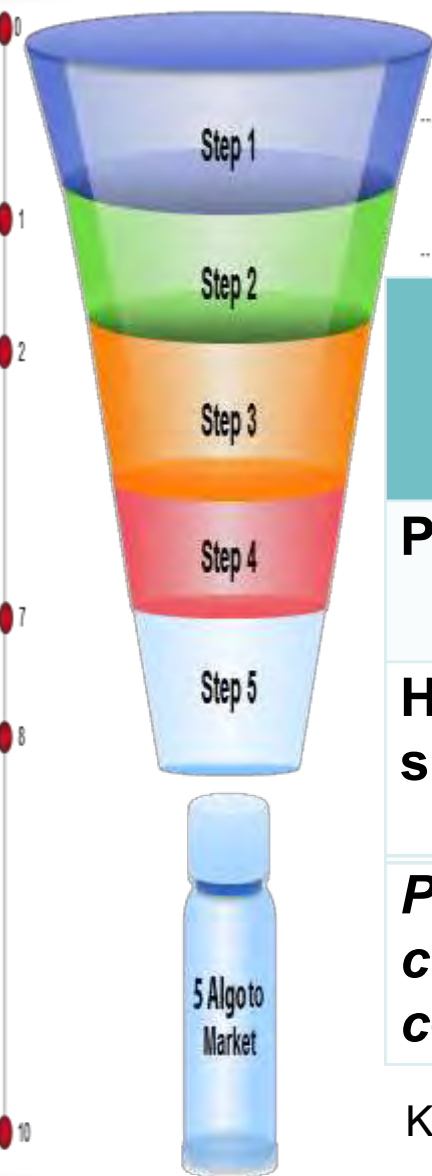
Marine Biotech Group, FFMS,
Bogor Agricultural Univ.

10,000 - 20,000 candidate drugs

What NEXT



Comparison of pharmaceutical products, herbal/
supplement, personal care & cosmetics

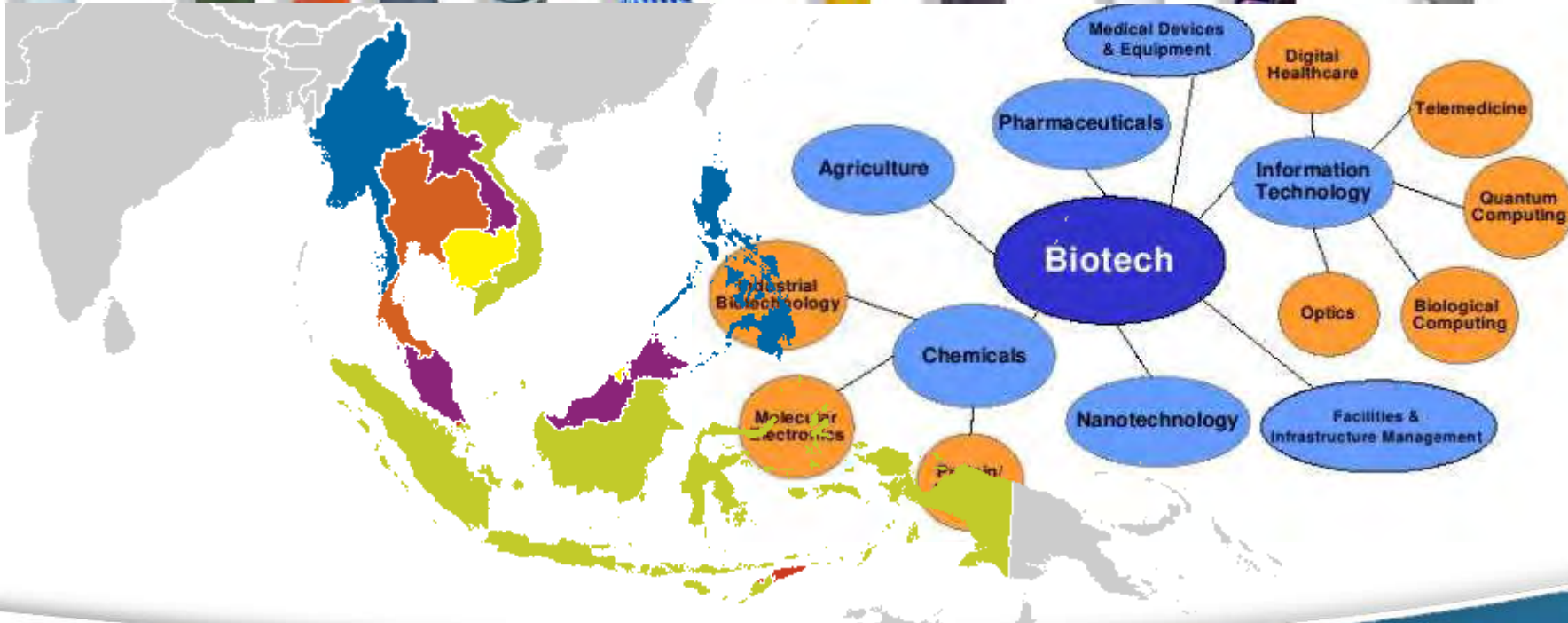


Product	Dev. (y)	Cost (US \$ Mio)	Est. return (US \$ B)	Est. growth (% /y)
Pharmac.	10 - > 15	231-500	US\$ 75 - 150	6
Herbal/ supplement	< 2-5	0.15 -7	US\$ 2.8	10-20
Personal care, cosmetics	< 2-5	0.15 -7	US\$ 2.8	10-20

Kate and Laird. (1999)



Collaborate



Acknowledgement



DAAD



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Bogor Agricultural University

Thank You