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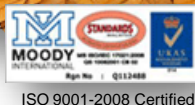
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# INDIGENOUS TRADITIONAL KNOWLEDGE (TK) IN PENINSULAR MALAYSIA: PHYTOCHEMICAL & BIOACTIVITY SCREENING



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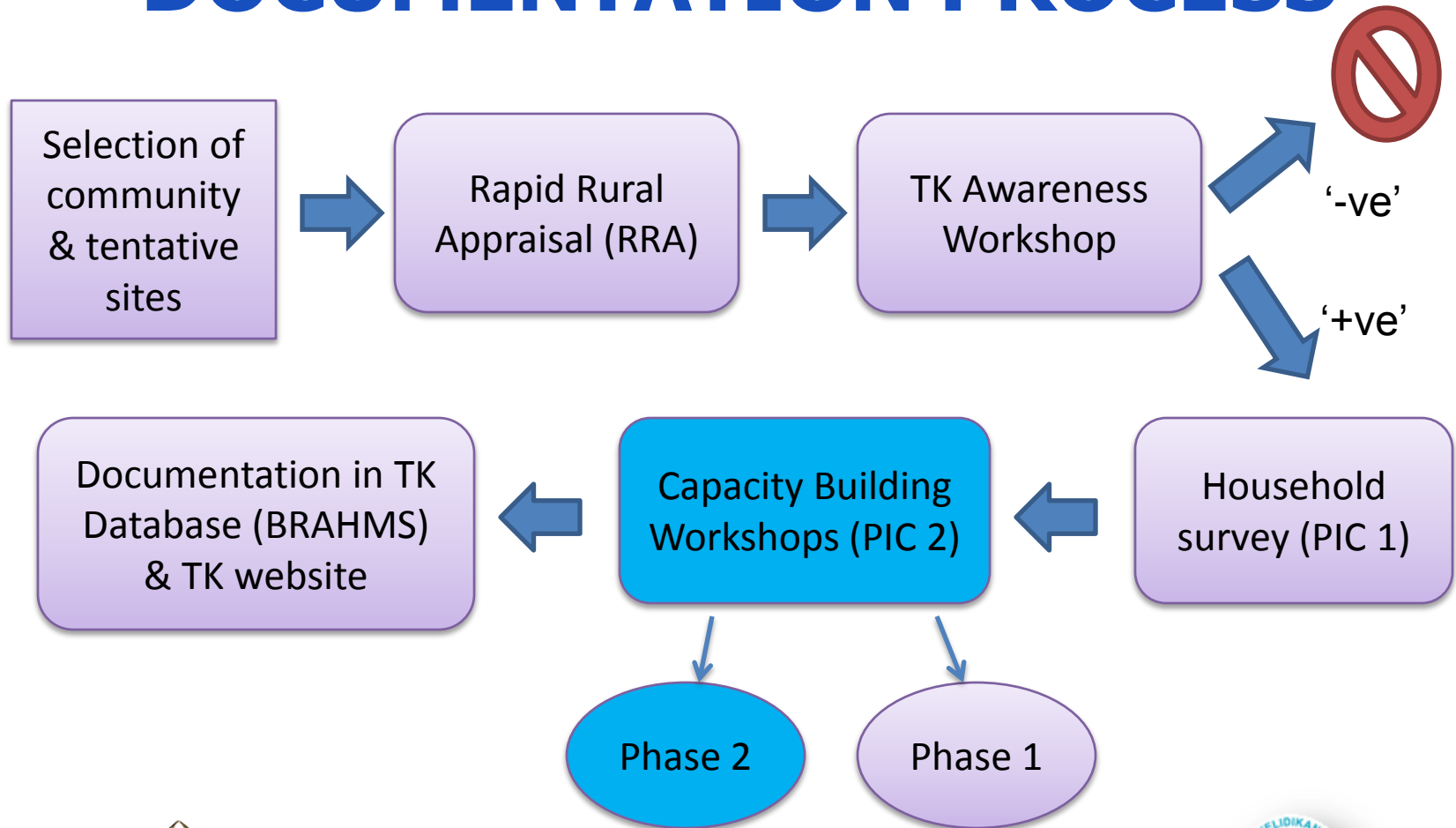
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# Research Activities

- TK awareness workshop
- Prior informed consent (PIC)
- Socio-economic survey
- Documentation & specimen collection training
- Sampel collection
- Phytochemical & bioactivity studies of selected species (Semelai, RPS Iskandar, Bera, Pahang)



# TRADITIONAL KNOWLEDGE (TK) DOCUMENTATION PROCESS



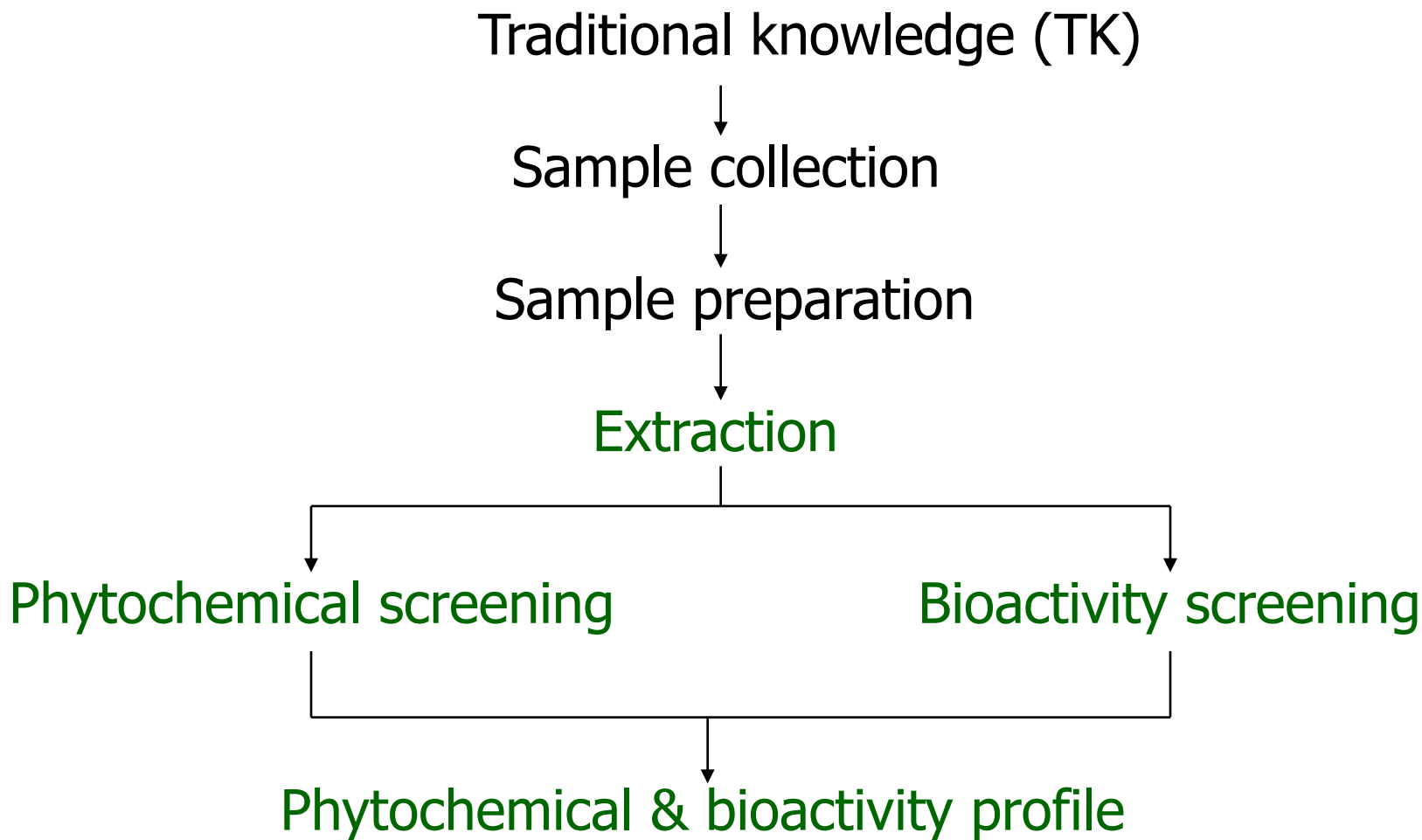
# Selection of species

## Criteria:

- **Commonly used/popular among people in the community**
- **Medicinal uses - not publicly available**
- **Traditionally used for fever, infection, diabetes, personal care etc.**
- **Part used (leaf, bark, stem)**
- **Availability (enough sample: 3-5kg)**



# Phytochemical & bioactivities screening



# Sampel

	<b>Location</b>	<b>Sub-ethnic</b>	<b>Date</b>	<b>No species</b>	<b>No extract</b>	<b>No essential oil</b>
1	RPS Iskandar, Bera, Pahang	Semelai	2-4Feb 2010	10	23	4
2	RPS Air Banum, Gerik, Perak	Jahai/Temiar	13-15 Jul 2010	10	30	10
3	Ulu Geroh, Gopeng, Perak	Semai	24-26 Mei 2011	6	21	13
4	Kg. Pulau Kempas, Kuala Langat, Selangor	Temuan	16-18 Ogos 2011	3	8	5
5	Kg Paya Mendoi, Kuala Krau, Pahang	Jahut	4-6 Okt 2011	3	9	5
6	Kg Bangkong, Pekan, Pahang	Jakun	1-3 Nov 2011	4	15	9

# Sampel

	<b>Location</b>	<b>Sub-ethnic</b>	<b>Date</b>	<b>No species</b>	<b>No extract</b>	<b>No essential oil</b>
7	Kg Selangi, Kota Tinggi, Johor	Kanaq	15-17 May 2012	3	12	
8	Kg Sg Berua, Kuala Berang, Terengganu	Semoq Beri	3-5 Jul 2012	3	9	
9	Kg. Aring, Gua Musang, Kelantan	Bateq	28-30 Aug 2012	4	13	
10	Kg Enggang, Lancang, Pahang	Che Wong	11-13 Sept 2012	3	10	



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# Sample collection





# Sample preparation



# Sample preparation



# Sample processing



drying

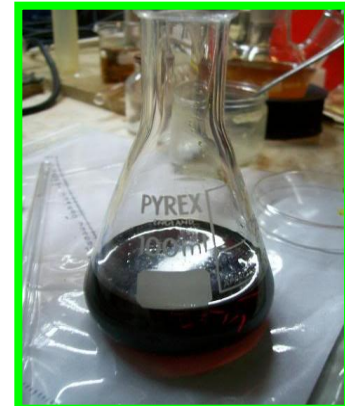
grinding



Extract



Evaporation



Soaking (methanol)

# Phytochemical profile

To screen chemicals content:

- Saponins
- Flavonoids
- Tannin
- Triterpenes
- Sterols

## Essential oil analysis



# Bioactivity profile

To validate & assess the potential as therapeutic / nutraceutical / cosmeceutical agents

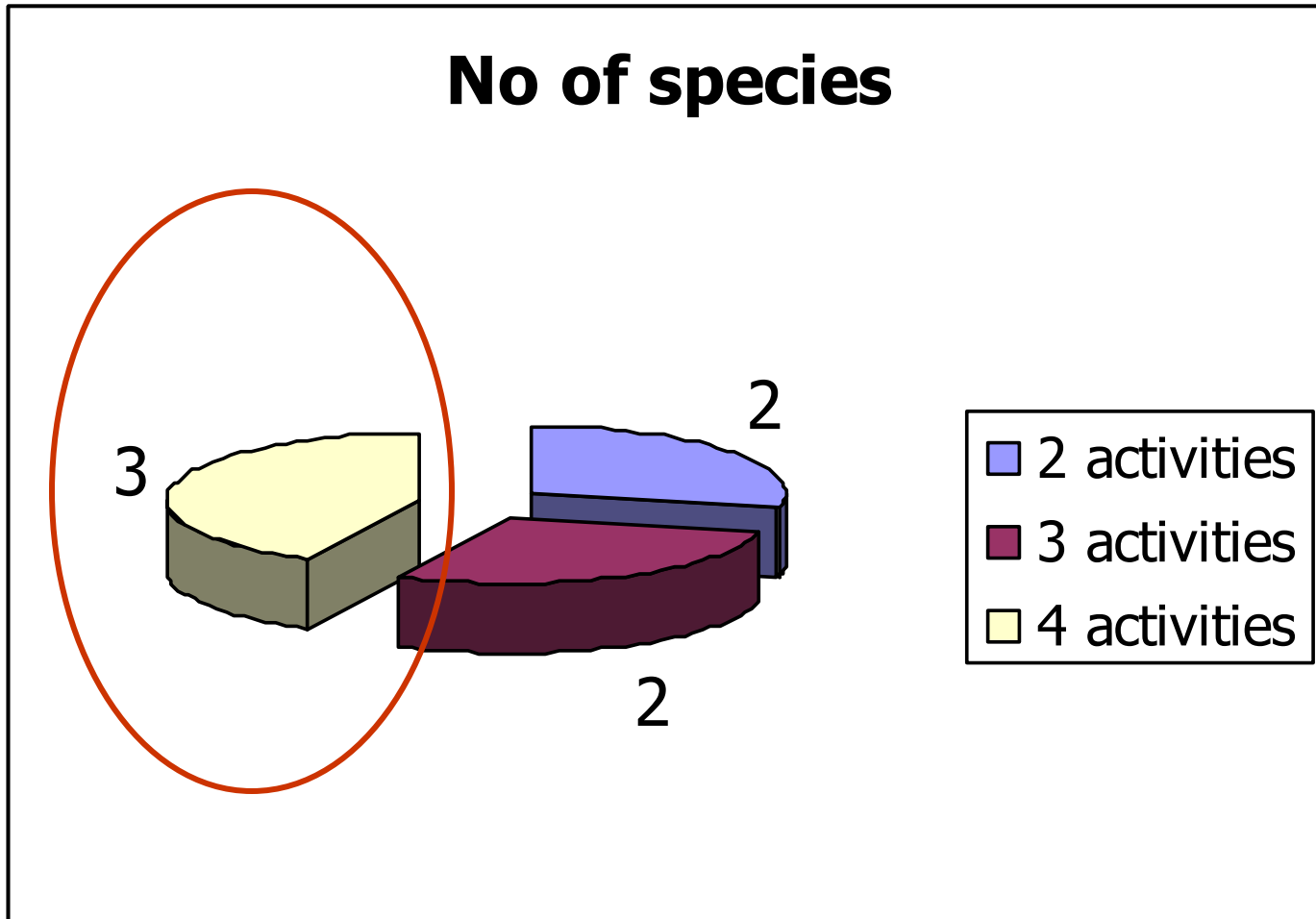
	Activity	Assays
1	Antioxidant	<ul style="list-style-type: none"><li>• DPPH Radical Scavenging Assay</li></ul>
2	Antiinflammatory	<ul style="list-style-type: none"><li>• Xanthine Oxidase enzyme inhibition assay</li><li>• Hyaluronidase enzyme inhibition assay</li><li>• TPA-induced ear oedema</li></ul>
3	Antimicrobial	<ul style="list-style-type: none"><li>• Anti-Methicillin resistant <i>S.aureus</i> (anti-MRSA)</li></ul>
4	Antidiabetic	<ul style="list-style-type: none"><li>• Alpha amylase inhibition assay</li><li>• Alpha glucosidase inhibition assay</li></ul>
5	Cytotoxicity (safety)	<ul style="list-style-type: none"><li>• Liver cell line</li><li>• Kidney cell line</li></ul>

# Bioactivity profile

<b>RPS Iskandar, Bera, Pahang</b>	<b>Species</b>	<b>Extract</b>
No of samples	10	23

<b>Bioactivity</b>	<b>Species</b>	<b>Extract</b>
Antioxidant	10	21
Antimicrobial	7	10
Antiinflammatory	7	12
Antidiabetic	8	12
Cytotoxicity (Safety)	9	15

# Bioactivity profile



# Bioactivity profile

	Species	Uses	Part used	Part	extract	AO	AI	IM	AD	CT
1	TSBR_X	stomach ache, hypertension, diabetes, post partum		branch	DT10/693	L	L	L	H	NT
				bark	DT10/694	H	H	H	H	NT
2	TSBR_Y	fly repellent		leaf	DT10/682	H	H	H	H	NT
				branch	DT10/683	H	H	H	H	NT

AO – Antioxidant, AI – Antiinflammatory, IM – Antimicrobial, AD – Antidiabetic,

CT - Cytotoxicity (safety)

H – high activity, L – low activity, NT - nontoxic



# Phytochemical profiles

Extract code	Part	Sa	Fla	Ta	Tri	Ste
DT10/682	leaf	2 cm		H 2	3+	3+
DT10/683	branch	0.5 cm		H 2		1+
DT10/694	bark	1 cm	1+	C 1		

# 2<sup>nd</sup> Phase Study

Discussion/Meeting with the community to inform the results gain from the lab analysis (19 Jan 2012)



Project	
Development of product prototype from TSBR087 based on traditional knowledge of Semelai sub-ethnic (NRE)	2012/2013

# Conclusions

- Preserve & maintain - TK
- Empower local orang asli
- Potential product development
- Possible benefit-sharing with the communities



# Team members

## NRE

## FRIM

- Norini Haron & Rasadah Mat Ali
- **Socio-economic**: Lim Hin Fui, Norshakila Yusof, Intan Nurulhani Baharuddin
- **Phytochemistry**: Adiana Mohd Adib, Nuziah Hashim, Ling Sui Kiong
- **Essential oil**: Nor Azah Mohd Ali, Mailina Jamil
- **Bioactivity**: Nik Musaadah Mustapha, Mastura Mohtar, Fadzureena Jamaludin, Normaizira Hamidi, Vimala Subramaniam, Rohana Sahdan, Mohamad Jemain Mohamad Ridhwan, Mazurah Mohamed Isa
- **Ethnobotany**: Tan Ai Lee, Nurul Husna Zaidi, Chang Yu Shyun, Zainon Abu Samah, Nurnida Mohd Kamal,

In Collaboration with

- *Jawatankuasa Penasihat Pengetahuan Tradisi Semelai Pos Iskandar Tasek Bera, Pahang and*
- *Jawatankuasa Pengetahuan Tradisi RPS Banum, Gerik, Perak*



# THANK YOU



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