Kailash CAFE: Sharing knowledge of a sacred landscape

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PREPARATION AND CHARACTERIZATION OF *SAPINDUS MUROKOSSI* (RITHHA) SEED POWDER FOR MEDICINAL PURPOSE

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OUTLINE

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INTRODUCTION

Sapindus mukorossi

Use of Rithha since decades

Shampoo

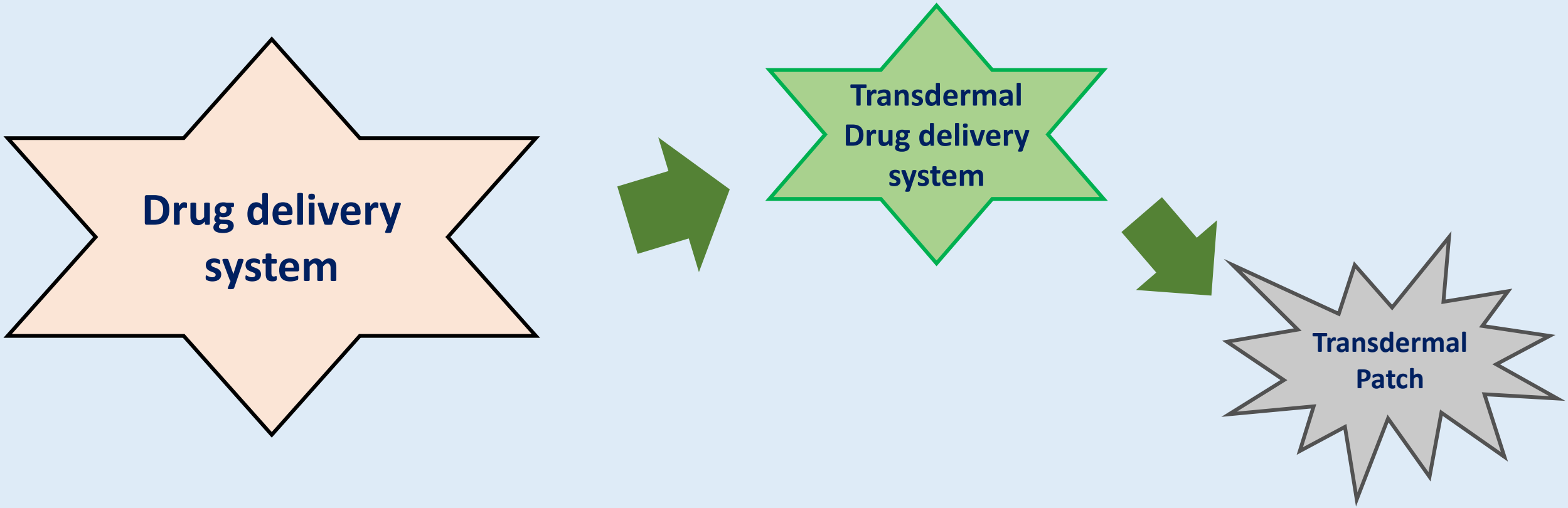
Soap

Detergent

Soapnut, also known as rithha is one of the unexplored plant in Nepal.

AIM OF RESEARCH

Soapnut has many components in that that can support for use in biomedical researches too.



METHODOLOGY

Collection of sample

- Rithha sample were provided by Research Center for Applied Science and Technology (RECAST), Tribhuvan University

Processing and oil extraction

- Rithha sample were cleaned with water and shade dried.
- Pericarp was separated and seed were grinded and sieved.
- Hexane was used as solvent and soxhlet extraction was done.
- The extraction process was done up to 3 cycle and oil was collected after evaporation of solvent.

Characterization of oil

- Gas Chromatography and Mass Spectroscopy (GC-MS) → Chemical profiling
- Differential Scanning Calorimeter (DSC) → Temperature stability
- Biological assay → Antioxidant and microbiological screening

Preparation of product and transdermal patch

- Using pericarp extract shampoo was prepare
- Using seed oil transdermal patch was prepared where oil is used as drug excipient

RESULT AND DISCUSSION

Figure 1. Photograph of soapnut whole seed, seed, pericarp and seed powder.

Figure 2. Soxhlet apparatus and extraction process.

RESULT AND DISCUSSION

GC-MS Analysis

Table 1. Fatty acid composition of Sapindus mukorossi seed-extracted oil by gas chromatography mass spectrometry (GC-MS).

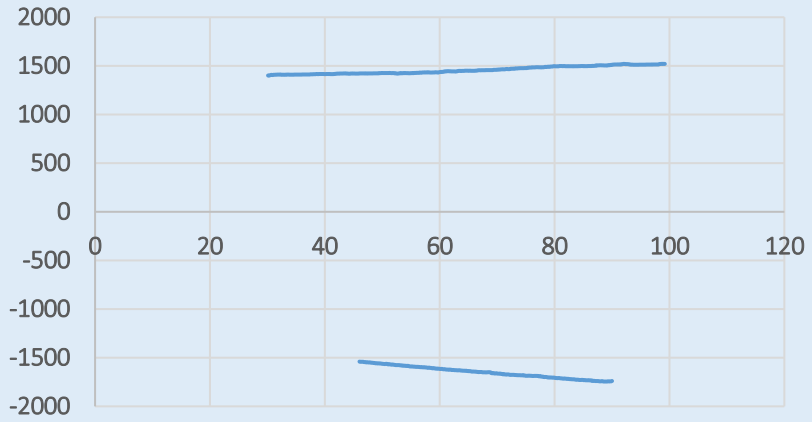
Peak	Retention Time (min)	Percentage	Fatty Acid
a	6.792	5.35	Palmitic acid (16:0)
b	8.317	0.90	Stearic acid (18:0)
c	8.914	52.46	Oleic acid (18:1)
d	9.497	7.19	Linoleic acid (18:2)
e	10.329	1.61	Linolenic acid (18:3)
f	10.632	6.84	Arachidic acid (20:0)
g	11.084	23.71	Eicosenic acid (20:1)
h	13.105	1.24	Behenic acid (22:0)
i	13.588	0.68	Erucic acid (22:1)

- S. mukorossi seed oil contains a substantial amount of unsaturated fatty acids, which account for 85.65%
- Among these unsaturated fatty acids, 76.85% were monounsaturated fatty acids.
- May cover the skin barrier and act as permeability enhancers, accelerates skin wound healing [27].

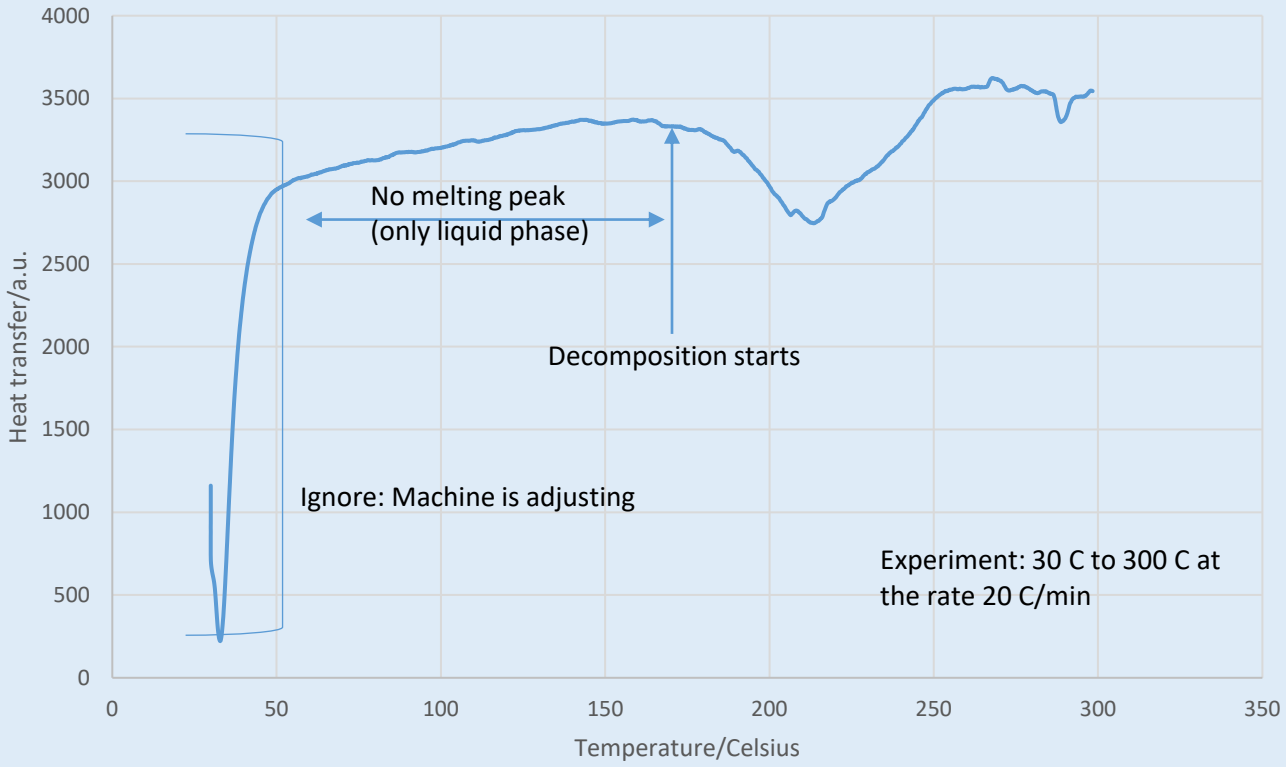
Chang-Chih Chen, Chia-Jen Nien, Lih-Geeng Chen, Kuen-Yu Huang, Wei-Jen Chang, Haw-Ming Huang, Effects of Sapindus mukorossi Seed Oil on Skin Wound Healing: In Vivo and in Vitro Testing, 2019.

RESULT AND DISCUSSION

DSC Analysis



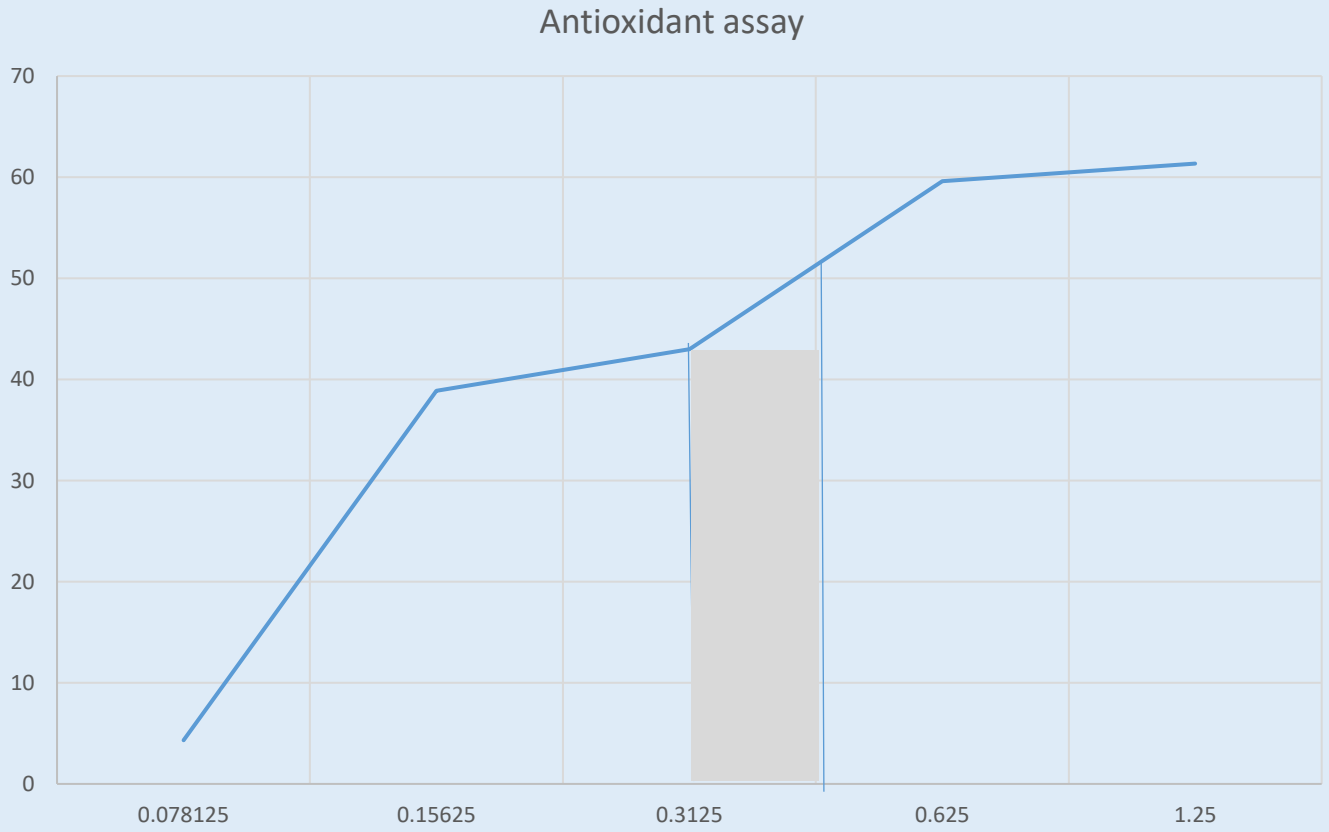
Experiment:
Heated up to 25 ^{0}C to 100 ^{0}C
Cooled to 45 ^{0}C at 10 ^{0}C / min



Experiment:
- Heated up to 30 ^{0}C to 300 ^{0}C at 20 ^{0}C / min increase rate.
- Decomposition of soapnut oil starts at around 180 ^{0}C
- Which means there are some matters that can decompose only after 180 ^{0}C

RESULT AND DISCUSSION

Antioxidant Analysis



Shaded region shows the IC50 vAlue in between 0.3125 to 0.625 µl.

RESULT AND DISCUSSION

Product preparation

- Every part of soapnut is useful.

- Pericarp was used for preparation of shampoo

- Few other excipients is enough to make shampoo

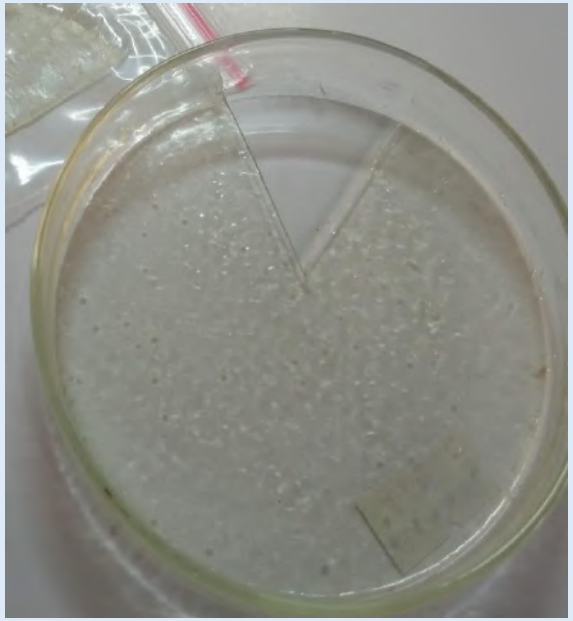
- Shampoo can be prepared locally to promote and preserve soapnut plant and fruits

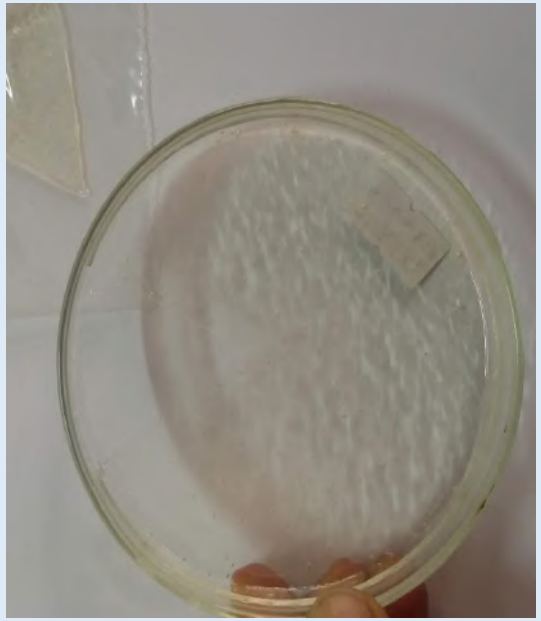
RESULT AND DISCUSSION

Use in biomedical area

- Palmitic acid, steric acid and oleic acid present on seed oil use as massage cream.

- In my work transdermal patch is prepared using soapnut oil as drug.





CONCLUSIONS

- Nepal is one of the richest country in medicinal and aromatic plants (MAPs) where many of the plants are under-utilized or replaced by modern materials.
- This study was focused on preparation of characterization of soapnut seed oil its implementation in bio prospecting and biomedical use.
- Triglycerides present almost 50 % can make soapnut a valuable plant for formulation of cosmetic cream and shampoo in local level.
- If the training and some basic facilities will be provided, a community where the soapnut is cultivated, they can have their own local product that can have the international recognition.
- For this RECAST team can assist for the training in formulation part if needed.

THANK YOU VERY MUCH FOR ATTENTION

ANY SUGGESTIONS AND QUESTION PLEASE……