

Composition, nutritional value and uses of *Ricinodendron heudelotii*, *Vitex doniana* and *Cleome gynandra* seeds oil, three indigenous oil species: a review

Nadjidath ADOME¹, Flora CHADARE², Fernande HONFO¹, Joseph HOUNHOUIGAN¹

¹UAC/EAS, Abomey-Calavi, Benin, ²SSTCPAP, National University of Agriculture, Sakété, Benin



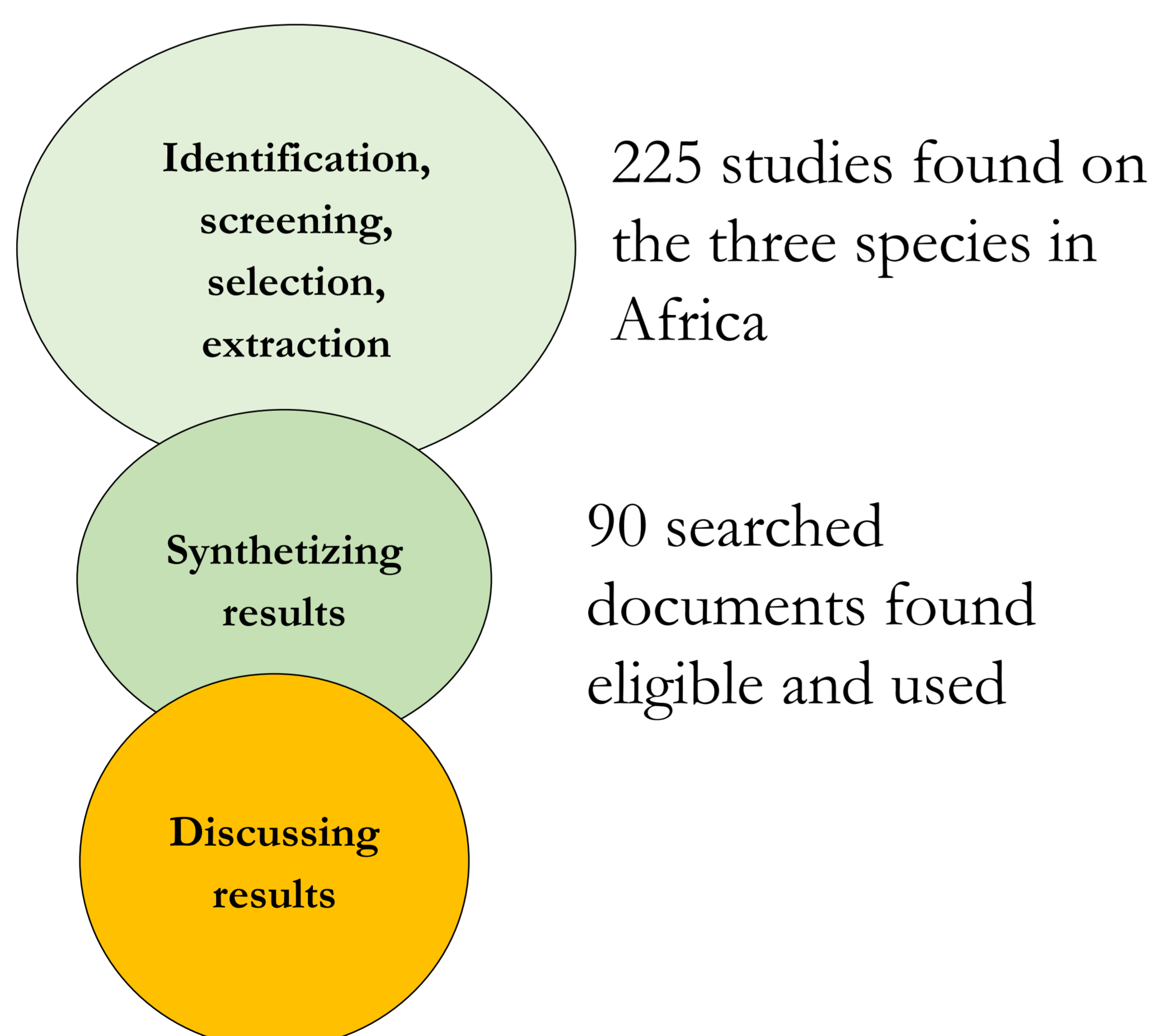
1 Introduction

- Oil seeds provide a range of economic, social, and environmental benefits in sub-Saharan Africa
- *Vitex doniana* Sweet, *Cleome gynandra* (L.) Briq. and *Ricinodendron heudelotii* (Bail.) are wild oil species of high interest
- Three underexploited seed crops contain appreciable amounts of oil which could warrant their screening for increased edible oil production

RESEARCH QUESTION: What are the nutritional composition the existing ethno-cosmetic and ethno-medicinal knowledge of *R. heudelotii*, *V. doniana* and *C. gynandra* seeds and oils?

2 Methods

- Literature review March to August 2020
- Research articles collected from AGORA, Web of Science, Scopus, Science Direct and Google Scholar



Literature review focused on:

- nutritional composition of seeds,
- triglyceride and fatty acid profile
- quality indices and physical properties of derived oils
- chemical composition (triglycerides, and fatty acids) and phytochemical properties

3 Key results

Tab 1: Composition of *R. heudelotii*, *V. doniana* and *C. gynandra* seeds

	<i>R. heudelotii</i> Average	<i>V. doniana</i> Average	<i>C. gynandra</i> Average
Dry matter (%)	41.9	30.05	-
Moisture content (%)	3.16	8.25	-
Crude protein (g/100g dw)	25.79	-	-
Crude lipids (g/100g dw)	51.83	28.55	27.35

Tab 2: Physicochemical properties of *R. heudelotii*, *V. doniana* and *C. gynandra* seeds oil.

	<i>R. heudelotii</i> Average	<i>V. doniana</i> Average	<i>C. gynandra</i> Average
Saponification value (mg KOH/g)	147.35	35.50	192.00
Iodine value (gI ₂ /100g)	88.41	113.15	122.5
Acid value (mg NaOH/g fat)	6.34	54.20	-
Peroxide index (meq/kg)	25.91	-	-
Insaponifiable content (%)	1.50	-	-
Free fatty acid (%)	1.24	27.00	-

Tab 3: Fatty acid content of *R. heudelotii*, *V. doniana* and *C. gynandra* seeds oil

	<i>R. heudelotii</i> Average	<i>V. doniana</i> Average	<i>C. gynandra</i> Average
Palmitic 16:0	5.75	34.24	11.2
Palmitoleic 16:1			0.35
Stearic 18:0	6.5	7.22	6.85
oleic 18:1	7.3	58.54	21.75
linoleic 18:2	39.7		58.7
linolenic 18:3			
Arachidic 20:0			0.15
Eicosenoic 20:1	0.1		0.1
lignoceric 24:0	1.2		
α -eleaostearic acid 24:3	50.2		

4 Discussion & perspectives

- The three seed oils are polyunsaturated oils
 - *R. heudelotii* seeds oil mainly composed of linoleic acid with a polyunsaturated fatty acid namely α -eleaostearic
 - *C. gynandra* seeds oil mainly composed of linoleic acid and oleic acid
 - *V. doniana* seeds oil mainly composed of oleic acid, palmitic acid and stearic acid
- *R. heudelotii* seeds oil \rightarrow preparation of fast drying binder and resins; good for salad dressing; in the treatment of cardiovascular diseases (not be used for cooking at high temperature or frying)
- *V. doniana* seeds oil \rightarrow production of resin, paint and skin cream

Acknowledgement

This study was funded by Wild Oil Project, a competitive research project of the University of Abomey-Calavi

