

Comparison of Pharmacognostic, Nutritional and Phytochemical Parameters of *Moringa concanensis* from Three Different Geographical Sources in India

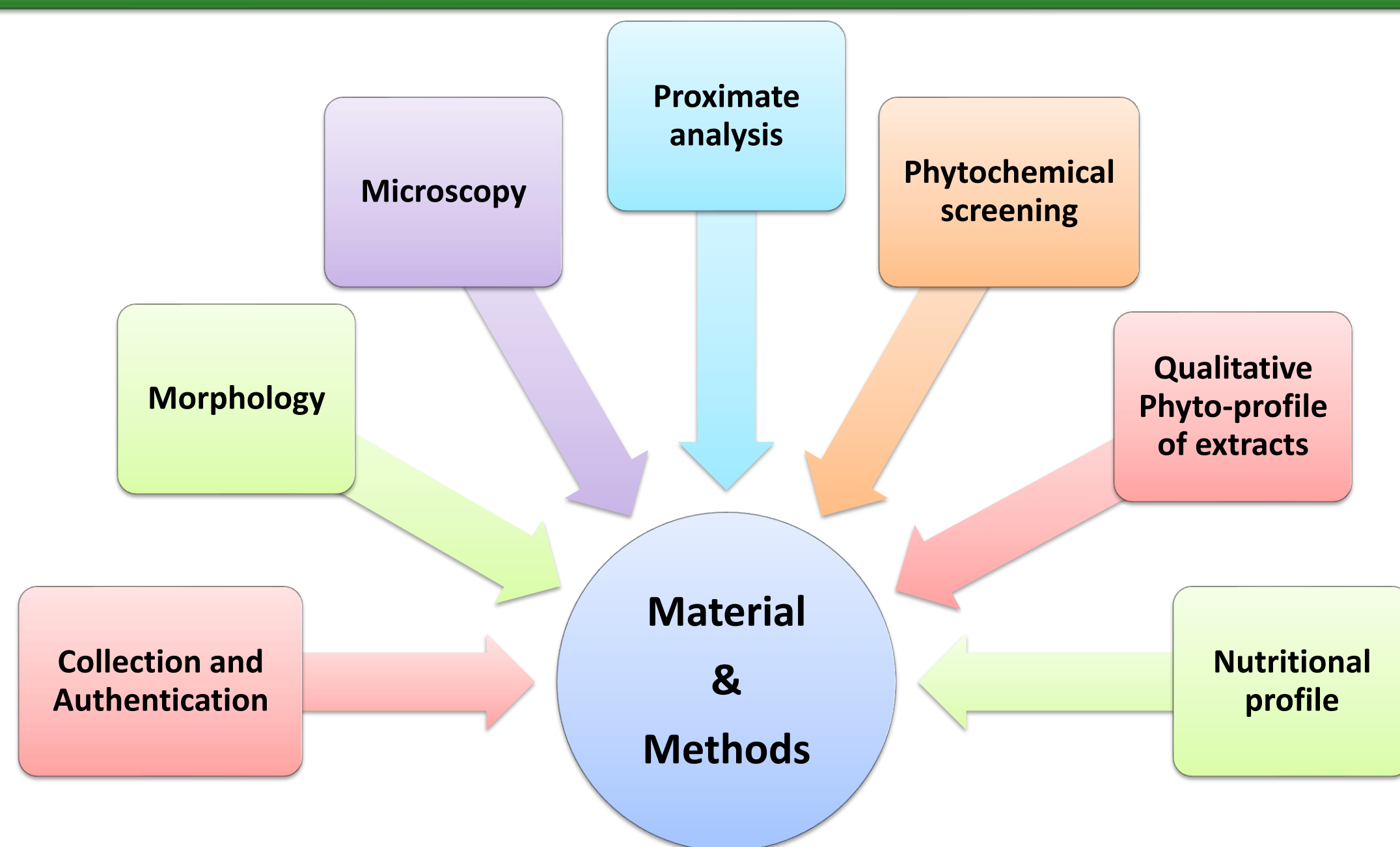
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INTRODUCTION & AIM

Nowadays, the climate is extremely vulnerable which modifies the geographical distributions of the various plant species. The plant species can convert, adapt or associate with the climatic conditions to adjust itself to that particular environment. Due to their natural diversity and tolerance to changes in the amplitude and rate of environmental changes, plant species respond to their surroundings. Still, it has been observed that not all plant species respond to variations in the weather in the same way. Environmental changes impact the flora's local and regional distribution, affecting the habitat's function, genetic diversity, and community composition, rendering some plant species more vulnerable. The *Moringa concanensis* wildy grows in various tropical regions of India. The plant might have some miraculous characteristics requiring proper development studies, including geographical distribution studies, to prove whether environmental factors can affect its quality. Therefore, the present study was developed to confirm the above hypothesis.

METHOD



RESULTS & DISCUSSION

Morphological characteristics

Parameters	Result
Type with Phyllotaxy	Compound leaves (Bipinnate very rarely tripinnate) Opposite
Size	leaflets are 2.5-3.8 cm long and 1.25-2.5 cm broad
Shape	Obovate
Apex	Obtuse
Venation	Reticulate
Surface	Glabrous on upper surface
Colour	Green
Odour	Characteristics
Taste	Bitter

Figure 1. *Moringa concanensis* leaves and flowers

Microscopical characteristics

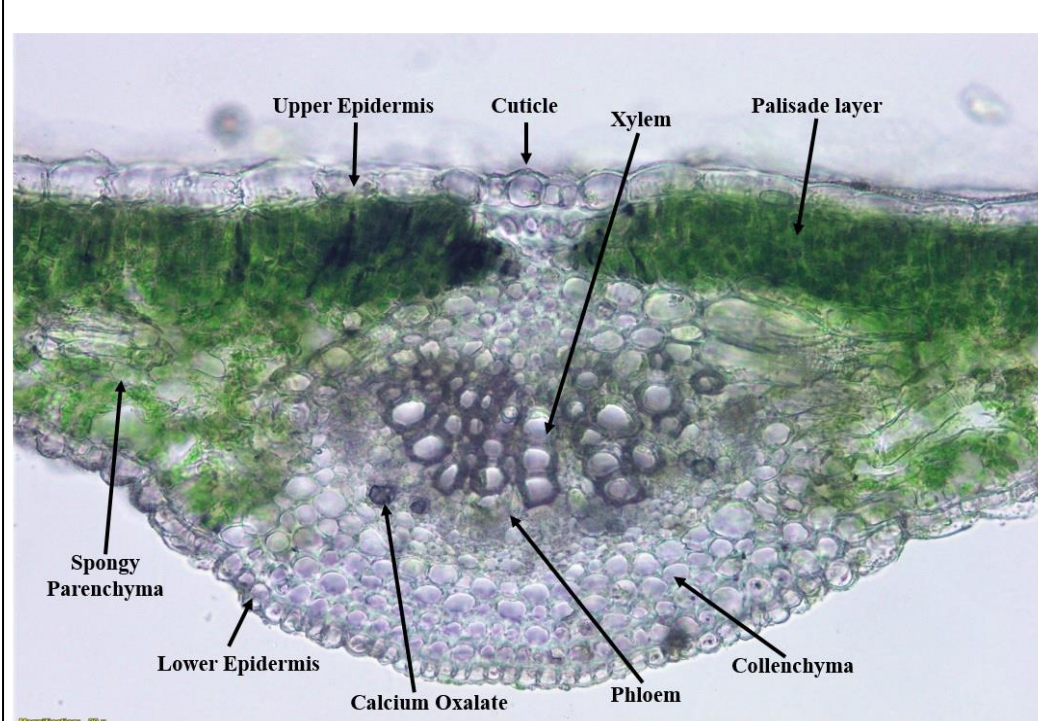


Figure 2. Unstained Transverse Section of Leaves of *Moringa concanensis* (20 x10)

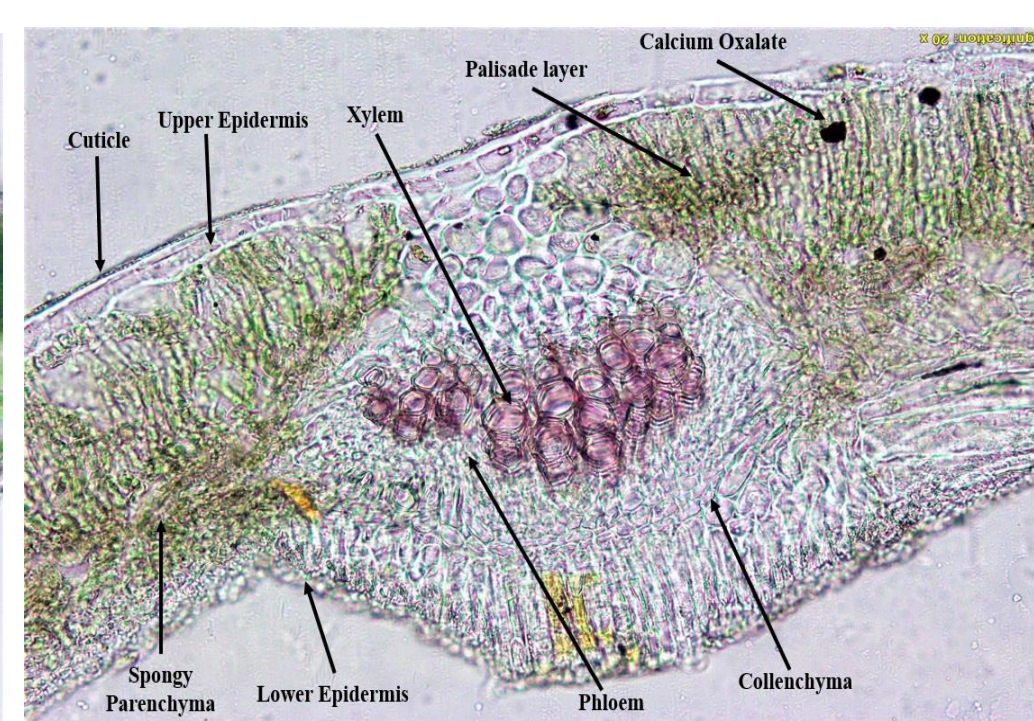


Figure 3. Stained Transverse Section of Leaves of *Moringa concanensis* (20 x10)

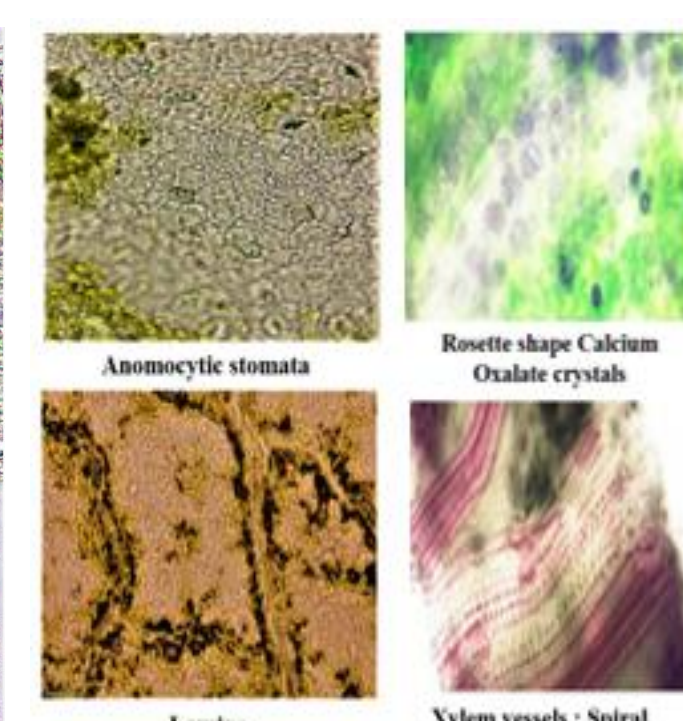


Figure 4. Powder characteristics of *Moringa concanensis*

Quantitative microscopy

Table 1 Leaf constants of 3 specimens of *Moringa concanensis*

Sr. No.	Parameters	Values		
		Specimen 1	Specimen 2	Specimen 3
1	Stomatal Index	11.01-14.26-16.90	10.5-13.95-15.85	10.95-14.10-16.56
2	Vein islet number	4-7 per mm sq	3-6 per mm sq	2-6 per mm sq
3	Vein termination number	2-4 per mm sq	2-4 per mm sq	3-5 per mm sq
4	Palisade ratio	7-10	8-11	8-10

Physicochemical Analysis

Table 2 Physicochemical parameters of powder of *Moringa concanensis*

Sr. No.	Parameters	Values % w/w		
		Specimen 1	Specimen 2	Specimen 3
1	Loss on drying	8.8 %	8.6 %	8.7 %
	Ash value			
2	Total ash	12.375 %	12.880 %	12.923 %
	Acid insoluble ash	2.7 %	3.1 %	2.15 %
	Water soluble ash	9.325 %	8.752 %	8.913 %
	Extractive value			
3	Water soluble extractive	23.84 %	23.53 %	23.55 %
	Alcohol soluble extractive	8.96 %	8.63 %	8.71 %

Nutritional Profile

Table 4 Nutritional profile of *Moringa concanensis* leaves

Sr. No.	Tested for	Limit of Quantitation	Results		
			Specimen 1	Specimen 2	Specimen 3
1	Moisture, % by mass	0.10	9.35	8.69	8.93
2	Protein gm/100gm	0.10	16.24	15.12	15.69
3	Total Fat, gm/100gm	0.10	1.82	2.13	1.50
4	Energy, Kcal/100gm	-	322.15	318.40	315.86
5	Total Sugar, gm/100gm	0.50	4.28	5.19	4.98
6	Carbohydrates, gm/100gm	1.00	60.29	54.36	58.54
7	Trans Fat, gm/100gm	0.10	Beneath the Limit of Quantitation		
8	Cholesterol, mg/100gm	0.50	Beneath the Limit of Quantitation		
9	Monounsaturated Fat, gm/100gm	0.50	Beneath the Limit of Quantitation		
10	Polyunsaturated Fat, gm/100gm	0.50	Beneath the Limit of Quantitation		
11	Saturated Fat, gm/100gm	0.50	0.61	0.81	0.75
12	Vitamin A, µg/100gm	5.00	3682.24	3650.39	3628.63
13	Vitamin C, mg/100gm	0.50	117.20	110.89	115.85
14	Vitamin D, µg/100gm	1.00	2.06	1.65	1.95
15	Vitamin E, mg/100gm	0.50	14.44	12.65	13.20
16	Calcium, mg/kg	2.50	27105.34	27098.23	27085.12
17	Iron (As Fe), mg/kg	1.00	1887.88	1865.32	1880.75
18	Sodium (As Na), mg/kg	2.50	5955.96	5938.47	5945.69
19	Potassium (As K), mg/kg	0.50	15721.82	15712.81	15705.98
20	Dietary Fibres, gm/100gm	0.50	21.22	18.52	15.36

CONCLUSION

The specimens of *Moringa concanensis* leaves collected from three different geographical sources in India show very less vulnerability towards environmental factors. In case of the morphological, microscopical and qualitative phytochemical studies show complete similarities. In Future, if studies extend to the identification and quantitation of each phytoconstituent then it may show variabilities in their content due to the effect of environmental factors.

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