

# **Qualitative, quantitative, *in vitro* antioxidant activity, and chemical profiling of *Leptadenia pyrotechnica* (Forssk.) Decne using advanced analytical techniques**

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**Supplementary Table S1.** Experimental design for conventional soxhlet extraction (CSE) and non-conventional ultrasound-assisted extraction (NCUSAE).

Extraction methods	Factors	Levels	Response variables
<b>CSE</b>	Solvent: material ratio (ml/g)	300/10; 350/10; 400/10	Extraction of alkaloids, tannin, phenols, and % yield
	Time (h)	18; 26; 34	
	Temperature (°C)	40; 50; 60	
<b>NCUSAE</b>	Nominal power (W)	120; 220; 320	
	Temperature (°C)	40; 50; 60	
	Time (min)	30; 45; 60	

Supplementary Table S2. Qualitative screening of *Leptadenia pyrotechnica* (LP) stem and root extracts.

Plant constituents	Tests	Indication	Stem						Root					
			LPSPE	LPSH	LPSCH	LPSEA	LPSE	LPSAQ	LPRPE	LPRH	LPRCH	LPREA	LPRE	LPRAQ
Primary metabolites														
Proteins and Amino acids	Biuret test	Peptide bond	-	-	-	-	-	-	-	-	-	-	-	-
	Ninhydrin test	Aliphatic primary amine and amino acids	-	-	-	-	-	-	-	-	-	-	-	-
	Xanthoprotein test	Tyrosine and tryptophan	-	-	-	-	-	-	-	+	-	-	-	-
	Millon Nasses test	Tyrosine and xanthoproteic acid	-	-	-	-	-	-	-	-	-	-	-	-
	Protein test	Protein containing sulphur	-	-	+++	-	+	-	-	-	+	-	-	-
	Tyrosine test	Tyrosine	-	-	-	-	-	-	-	-	-	-	-	-
	Cysteine test	Cysteine	-	-	+++	+	-	-	-	-	-	-	-	-
Carbohydrates	Fehling’s test	Reducing sugar	-	-	-	-	-	-	-	-	-	-	-	-
	Iodine test	Starch, dextrin, and glycogen	-	-	-	-	-	-	-	-	-	-	-	-
	Cobalt chloride test	Glucose and fructose	+++	+++	+++	++	+	++	+++	+++	++	+++	+	+++
	Barfoed’s test	Monosaccharides	-	-	-	-	+	-	-	-	-	-	-	-
	Seliwanoff’s test	Ketohexoses and fructose	-	+	-	-	-	-	-	-	-	-	-	-
	Bial’s orcinol test	Pentose and pentosans	-	-	-	-	-	-	-	-	-	-	-	-
	Tannic acid test	Starch	-	-	-	-	+++	+	-	-	-	+	++	++
Lipids	Saponification test	Oil and fat	-	-	-	-	+	+	+	+	+	+	+	+
Secondary metabolites														
Alkaloids	Dragendroff’s reagent test	Secondary and tertiary amines	+	+	+++	++	++	-	+	+	++	+	+	-
	Murexide test	Purines	-	-	-	-	-	-	-	-	-	-	-	-
	Tannic acid test	Cinchonine, caffeine, strychnine, and quinine	-	+++	++	+	-	+	-	-	-	+++	+	++
Glycosides	Keller Killiani test	Cardiac glycosides, bufadienolide, and free sugar	+	++	-	-	+++	-	++	++	-	-	+	+
	Legal’s test	Cardenolides	+	++	++	+	+	+	+	+	++	+++	++	++
	Borntrager’s test	Anthraquinones	-	-	-	-	+	-	-	-	-	+	-	-
Flavonoids	Shinoda test	Xanthones, flavonones, and flavononols	-	-	-	-	+	-	-	-	-	-	-	-
	Sulphuric acid test	Chalcones, aurons, flavanes, flavones, and flavonols	++	-	-	+	+	-	-	-	+	+	+	+

Phenols	Potassium dichromate test	Aldehydes and ketones	+	+	-	++	+	+	+	+	-	+	+	++
	Lead acetate test	Phenolic compound	+++	+++	++	++	++	-	+++	++	+	++	-	-
Tannins	Ferric chloride (FeCl <sub>3</sub> ) test	Cathechic tannin	-	-	+++	+	+	-	-	-	-	-	-	-
	Bromine water	Condensed tannin	+	+	-	-	-	+	++	++	+	++	+	+
	Hydrochloric acid (HCl) test	Phlobatannins	-	+	-	-	-	+	-	-	+	+	+	-
Saponins	Foam test	Saponin	++	+	+	+	++	+	+	+	+	+	++	+
Terpenoids	Terpenoid test	Terpenoid	+++	+	-	++	+++	-	-	-	-	-	-	-
Steroids	Salkowski test	Phytosterols and cholesterol	+	-	+	-	-	-	-	-	-	-	-	-
Acidic compound	Sodium bicarbonate test		++	++	+++	++	++	+	-	+	+	++	+++	+++
Organic acids	FeCl <sub>3</sub> test	Malic acid	++	+	-	+	+	+	+	+	+	+	++	+
	Lead acetate test	Oxalic acid	+	++	+	+	+	+++	++	+	+	+	++	+++
	Tartaric acid test	Tartaric acid	-	-	+	-	-	-	-	-	-	-	-	-
	Citric acid test	Citric acid	-	-	++	+	++	-	-	-	+	-	-	+
Vitamins	Vitamin test	Vitamin C	-	-	+	-	+	-	-	-	+	-	-	-
Volatile oils	Solubility test	Volatile oils	-	-	+	++	+++	++	-	+	-	+	++	+

Note: - (absent), + (less quantity), ++ (moderate quantity), +++ (high quantity).