

## Supplementary file

### Material and methods

#### *Phytochemical screening*

According to procedures outlined by Harborne [1], Harborne and Williams [2], Trease and Evans [3], and Sofowora [4], with a few minor modifications, a corresponding portion of the dry powder samples of mature fruits (Km) and immature fruits (KI) were extracted either in water or methanol and the extracts used for phytochemical analysis of compounds such as tannins, flavonoids, terpenoids, alkaloids, anthraquinones, saponins, and steroids.

### Results

#### *Phytochemical screening*

Table 1 illustrates the phytochemical analysis of *K. pinnata* mature and immature fruit extracts. Tannins, alkaloids, steroids, terpenoids, and flavonoids were present in both the water and methanolic extracts of mature fruits, while saponin was found only in the water extract. Furthermore, tannins, steroids, terpenoids, and flavonoids were found in both the water and methanolic extracts of immature fruits, whereas alkaloids and saponins were present only in the water extract.

**Table S1.** Qualitative phytochemical screening of water and methanol extracts of mature (Km) and Immature (KI) fruits of *K. pinnata*.

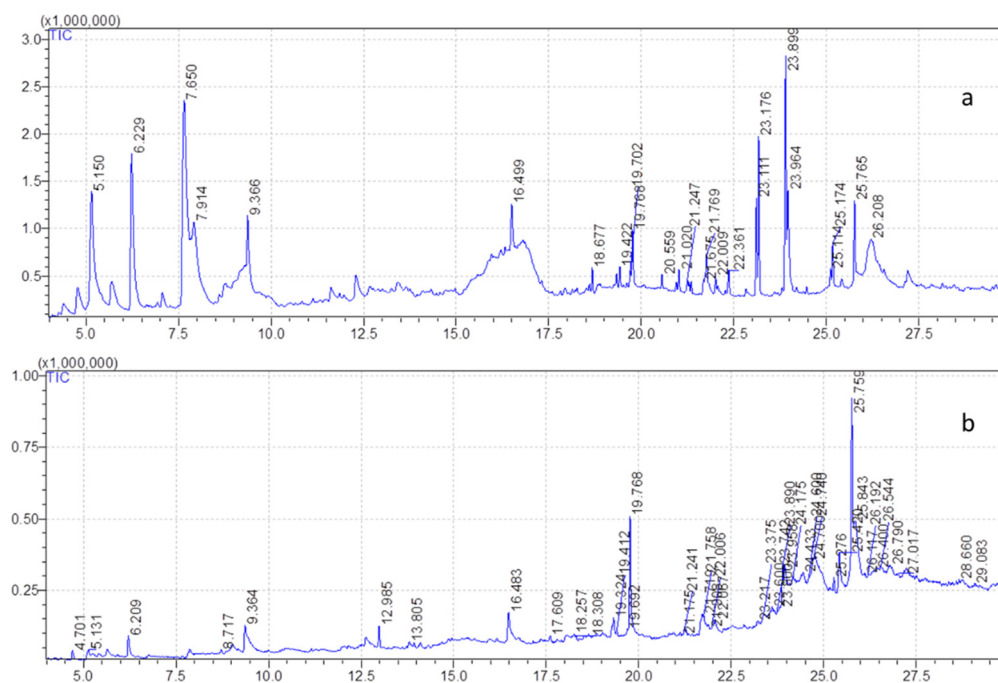
Sample	Extract	Tannin	Alkaloids	Saponin	Steroid	Terpenoids	Flavonoid
K <sub>m</sub>	water	+	+	+	+	+	+
K <sub>I</sub>		+	+	+	+	+	+
K <sub>m</sub>	methanol	+	+	-	+	+	+
K <sub>I</sub>		+	-	-	+	+	+

+ (detected in assay) and - (not detected in the assay).

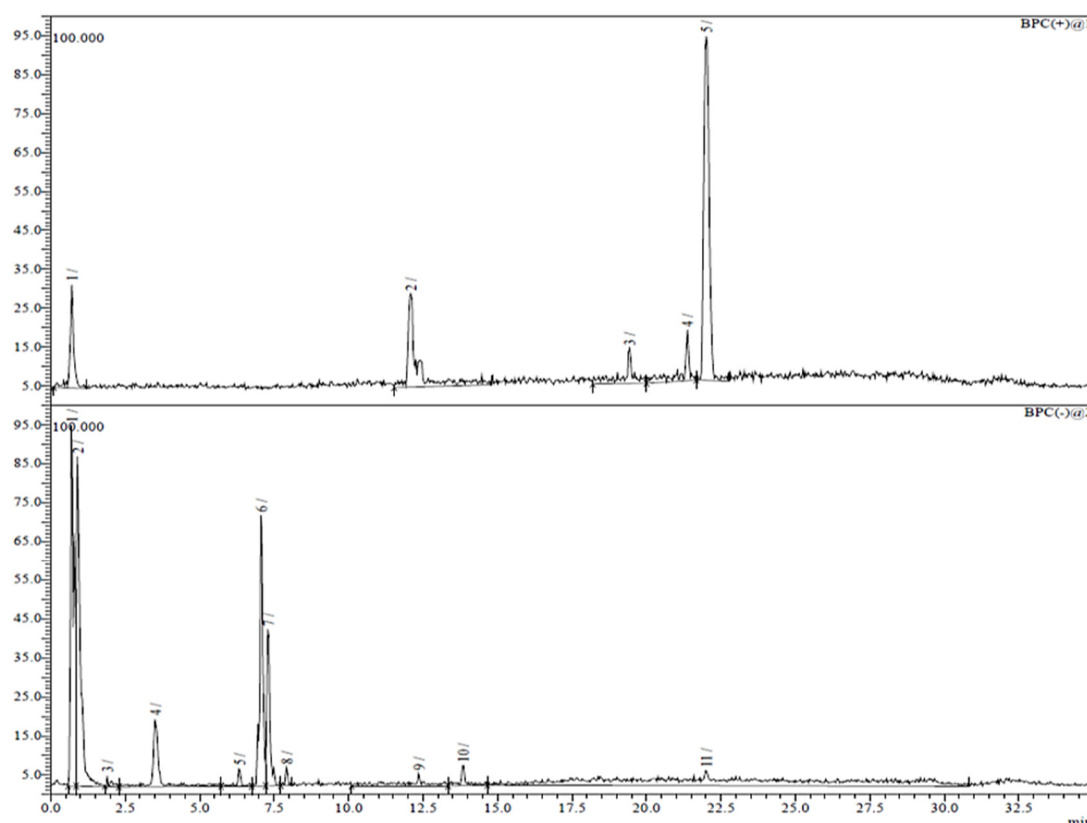
### Discussion

Tannins, steroids, terpenoids, alkaloids, saponins, and flavonoids are found in both mature and immature fruits (Table S1). These phytochemicals are known to be responsible for bioactivity and may therefore be responsible for the antioxidant activities of the fruit's extracts. Oseni and Williams [5] reported that, tannins are useful in the treatment of inflammation and ulcers and have remarkable cancer prevention activity. According to Fagbohun et al. [6], the analyses of *K. africana* fruit extracts (ethanol, hexane, ethyl acetate, butanol, or aqueous) revealed the presence of flavonoids, alkaloids, glycosides, phenols, carbohydrates, sterols, or saponins. These findings are in agreement with our findings. These phytochemicals are known to be biologically active or helpful in the treatment of a variety of illnesses [7]. For instance, *K. africana* fruit extracts in all solvents other than aqueous extract are rich in flavonoids and phenols. Numerous plant extracts have high phenolic and flavonoid contents that are known for their anti-inflammatory or anti-diabetic properties [6]. Additionally, the fruit's steroid derivatives have bactericidal and insecticidal characteristics

[6]. Alkaloids from medicinal plants are considered to possess effects that are anti-malarial, anti-microbial, anti-inflammatory, anti-cancer, and antispasmodic [8]. Additionally, it has been discovered that saponins are found in various solvent extracts and are one of the most potent ingredients in many herbal medicines [9] with numerous health advantages, including the ability to reduce cholesterol and possess anticancer effects [90].



**Supplementary Figure S1.** GC-MS total ion chromatogram (TIC) of methanolic extract of (a) mature ( $K_m$ ) and (b) immature ( $K_i$ ) fruits of *K. pinnata*.



**Supplementary figure S2.** LC-MS/MS total ion chromatogram (TIC) in positive (up) or negative ion modes (down) of crude methanolic extract of mature ( $K_m$ ) fruits of *K. pinnata*.

## References

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