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ABSTRACT

Annona muricata belongs to the family Annonaceae which is known to have anticancer, anti-inflammatory and many other bioactivities. Leaves, twig, fruit and seed of *A. muricata* were collected from Suhan Biotech and dried. Hot and cold aqueous extracts were prepared for the preliminary screening of phytochemicals and aqueous extracts of *A. muricata* were evaluated for total phenolic, scavenging assay (DPPH; 1-1-diphenyl-2-picrylhydrazyl) and cytotoxic activities. Phytochemical screening of leaves extracts revealed the presence of alkaloids, terpenoid, reducing sugar, carbohydrate and anthocyanins. While for twig extracts it revealed the presence of coumarines. Anthraquinones, terpenoid, flavonoid, reducing sugar, lipids and coumarines were found in fruit and seed extracts. The total phenolic content was found to be $2.372 \pm 0.922 \mu\text{g GAE/g}$, $85.85 \pm 6.23 \mu\text{g GAE/g}$, $53.56 \pm 8.39 \mu\text{g GAE/g}$ and $54.67 \pm 13.33 \mu\text{g GAE/g}$ for leaves, twig, fruit and seed respectively. On the other hand, all extract have showed IC_{50} value more than $500 \mu\text{g/mL}$ in DPPH scavenging assay. Cytotoxic evaluation of all extracts against HTB43, MCF-7 and MDAMB231 cell lines showed IC_{50} value more than $250 \mu\text{g/mL}$. In conclusion, the results showed that aqueous extract of *A. muricata* was inappropriate as anticancer agent.

INTRODUCTION

Medicinal plants are considered as the basis for health preservation and care worldwide. One of the medicinal plant is *Annona muricata*. This plant is known as soursop (English) belong to Annonaceae family. This soursop tree is about 5-10 m tall and 15-83 cm in diameter with low branches. This plant is reported to be useful in the treatment of various health ailment such as fever [1], respiratory illness [2], malaria [3], liver, heart and kidney infections [4]. Various studies have revealed the pharmacological activity of *A. muricata* such as antimicrobial, antiprotozoan, antioxidant, insecticide, larvicide, selective cytotoxicity to tumoral cells, anxiolytic, anti-stress, anti-ulceric, wound healing, anti-icteric, hepatoprotective, and hypoglycemic. In recent year, it has become widely used for cancer treatment.

RESULT AND DISCUSSION

Table 1: Qualitative phytochemical analysis of *A. muricata* extracts

Secondary Metabolite	Fruit	Seed	Hot Water extract (Leaves)	Cold Water extract (Leaves)	Hot Water extract (Twig)	Cold Water extract (Twig)
Antraquinones	+	+	-	-	-	-
Terpenoid	+	+	+	+	-	+
Flavonoid	+	+	-	-	-	-
Saponin	-	-	-	-	-	-
Tannins	-	-	-	-	-	-
Phlobatannins	-	-	-	-	-	-
Alkaloids	+	-	+	+	-	+
Glycosides	-	+	+	-	-	-
Reducing sugar	+	+	+	+	-	-
Steroids	-	+	-	-	-	-
Lipids	+	+	-	-	-	-
Phenols	+	-	-	-	-	-
Coumarines	+	+	-	+	+	+
Carbohydrate	+	-	+	+	-	-
Anthocyanins	-	-	+	+	-	+

Table 2: Total phenolic content of *A. muricata* extracts

Plant part	Leaves	Twig	Fruit	Seed
Total phenolic content (GAE, $\mu\text{g} / \text{mg}$ extract)	2.372 ± 0.922	85.85 ± 6.23	53.56 ± 8.39	54.67 ± 13.33

(+), Presence, (-), Absence

Table 3: DPPH radical scavenging and cytotoxic activity of *A. muricata* extracts

Plant part	DPPH radical scavenging activity, IC_{50} value ($\mu\text{g/ml}$)	Cytotoxic activity, IC_{50} value ($\mu\text{g/ml}$)		
		HTB43	MCF-7	MDAMB231
Leaf	530.18	>250 $\mu\text{g/ml}$	>250 $\mu\text{g/ml}$	>250 $\mu\text{g/ml}$
Twig	724.75	>250 $\mu\text{g/ml}$	>250 $\mu\text{g/ml}$	>250 $\mu\text{g/ml}$
Fruit	>500	>250 $\mu\text{g/ml}$	>250 $\mu\text{g/ml}$	>250 $\mu\text{g/ml}$
Seed	>500	>250 $\mu\text{g/ml}$	>250 $\mu\text{g/ml}$	>250 $\mu\text{g/ml}$



Figure 1: *Annona muricata*: (a) whole plant (b) leaves (c) fruit and (d) seed

OBJECTIVE

To evaluate the presence of phytochemical constituents and antioxidant activity in *Annona muricata*

MATERIALS & METHODS

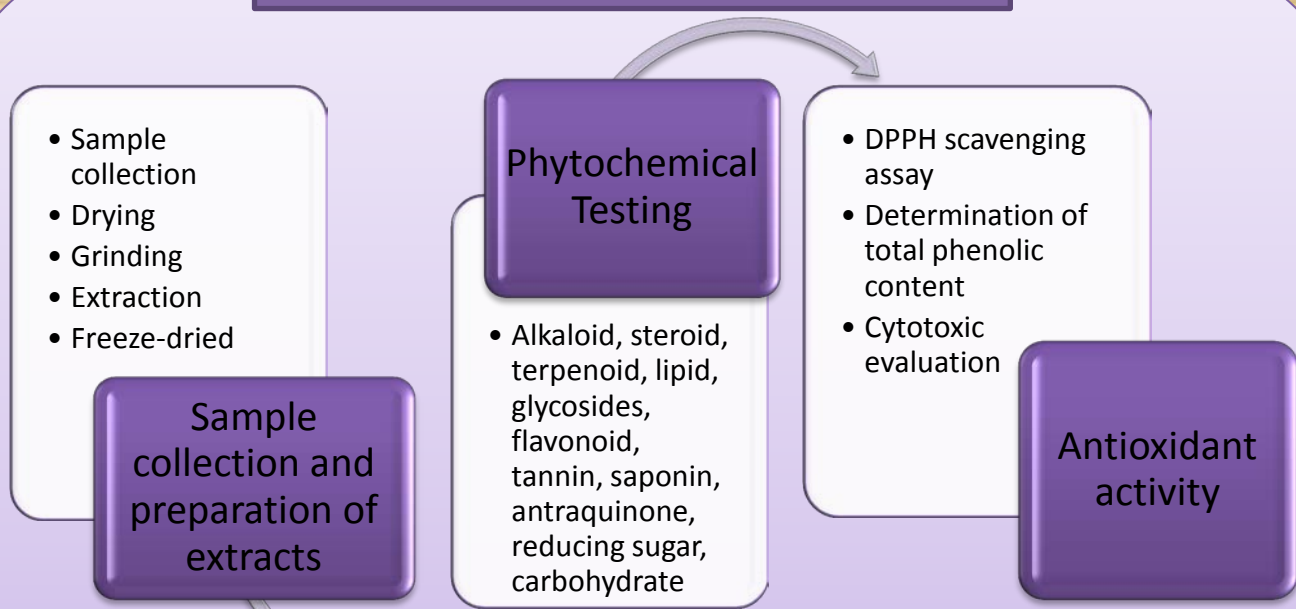


Figure 2: Preparation of aqueous extracts of *A. muricata* samples for phytochemical analysis and antioxidant activity

Table 1 showed that saponin, tannin and phlobatannins were present in all extract of *A. muricata* and fruit part have the highest number of secondary metabolite compared the others. Whereas, the results of Table 2 showed that twig part have the highest amount of phenolic compound followed by seed, fruit and leaves. Phenolic compound are considered as the major phytochemicals responsible for the antioxidant activity. Result from Table 3 showed that the value of IC_{50} more than $500 \mu\text{g/mL}$ for DPPH scavenging assay and more than $250 \mu\text{g/mL}$ for cytotoxic activity.

CONCLUSION

From this result, *A. muricata* have various phytochemical compounds which are known to have medical important and directly responsible for different activity. The result also showed that all *A. muricata* extract possessed antioxidant activity and have no anticancer properties on HTB43, MCF-7, MDAMB231 cell lines.

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