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-di-p phenyl-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 coumarins. Antraquinones, terpenoid, flavonoid, reducing sugar, lipids and coumarins were found in fruit and seed extracts. The total phenolic content was found to be 2.372±0.922 µg GAE/g, 85.85±6.23 µg GAE/g, 53.56±8.39 µg GAE/g and 54.67±13.33 µg GAE/g for leaves, twig, fruit and seed respectively. On the other hand, all extract have showed IC_{50} value more than 500 µg/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 µg/mL. In conclusion, the results showed that aqueous extract of *A. muricata* was inappropriate as anticancer agent.