Phytochemical and bioactivity studies of the leaves and stem barks of Tibouchina semidecandra L. have been carried out. The ethyl acetate extract of the leaves yielded four flavonoid compounds, identified as quercetin, quercetin 3-O-a-l-(2"-O-acetyl) arabinofuranoside, avicularin, and quercitrin, while the stem barks gave one ellagitannin, identified as 3,3'-O-dimethyl ellagic acid 4-O-a-l-rhamnopyranoside. Evaluation of the antioxidative activity on the crude extracts and pure compounds by electron spin resonance (ESR) and ultraviolet-visible (UV-vis) spectrophotometric assays showed that the pure isolated polyphenols and the EtOAc extract possessed strong antioxidative capabilities. Quercetin was found to be the most active radical scavenger in DPPH-UV and ESR methods with SC50 values of 0.7 µM ± 1.4 and 0.7 µM ± 0.6 µM, respectively, in the antioxidant assay. A combination of quercetin and quercitrin was tested for synergistic antioxidative capacity; however, there was no significant improvement observed. Quercetin also exhibited strong antityrosinase activity with a percent inhibition of 95.0% equivalent to the positive control, kojic acid, in the tyrosinase inhibition assay.