Antioxidant and Anti-Proliferative Activities of the Fractions of *Piper betel* Ethyl Acetate Extract

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**Background:** *P. betel* is a relatively common herb in Asia. It is traditionally used to treat a wide range of ailments such as bad breath, nose bleeds and wound healings. *P. betel* has been reported to exert anti-cancer, anti-inflammatory and immunomodulatory activities. This study evaluates the antioxidant and anti-cancer activities of the fractions of *P. betel* ethyl acetate extract.

**Methods:** The leaves were dried and extracted sequentially using solvents of varying polarity. The ethyl acetate extract collected was then fractionated using Gilson preparative HPLC system, and this resulted to the collection of 15 fractions. Antioxidant potential for the fractions was evaluated through the following assays: Ferric Reducing Antioxidant Power (FRAP), DPPH (2,2-Diphenyl-1-1-picrylhydrazyl) and ABTS (2,2'-Azinobis (3-ethylbenzothiazoline-6-sulphonic acid). The fractions were also tested on ATCC colon cancer cell line (HCT116) to determine their anticancer activity, measured via MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) assay.

**Results:** Fraction #3 showed the highest percentage of DPPH radicals inhibition, with an EC50 value of $32.49 \pm 0.20 \mu g/mL$. Fraction #2 showed significant antioxidant activity based on ABTS assay (EC50 value of $81.64 \pm 0.64 \mu g/mL$) and FRAP assay ($523.50 \pm 0.14 mmol Fe^{2+}/mg$ fraction). Fraction #9 showed the highest anti-proliferative activity with an IC50 value of $36.84 \pm 1.06 \mu g/mL$.

**Conclusion:** This study indicates *P. betel* ethyl acetate extract contains phytochemicals with significant antioxidant and anticancer activities.

**Keywords:** Antioxidant, anti-proliferative, *Piper betel*