Antioxidant activity by *in vitro* models of ethanol extracts and organic partitions from *Piper oradendron* and *Piper jacquemontianum* natives from Guatemala

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**Key words:** Antioxidant; Partition; DPPH, ABTS, Total phenols

**Abstract**

**Introduction:** Ethanol extracts (EE) and partitions of *P. jacquemontianum* (Pj) and *P. oradendron* (Po) endemic species from Guatemala, were studied for their antioxidant activity by three *in vitro* methods and compared with three standards.

**Experimental:** Milled dried leaves were percolated with ethanol, and concentrated by rotary evaporation; dried extracts were partitioned with hexane (HP), ethyl acetate (EAP) and ethanol (EP) and concentrated. Antioxidant activity was evaluated by total phenols (TP), DPPH and ABTS by TLC and spectrophotometry. Data was compared with vitamin E, TBHQ and quercetin. Trolox equivalent (TE) was calculated for ABTS.

**Results and discussion:** EE yields were 27.3% for Pp and 24% for Pj; partitions yields were 4.9, 8.2 and 42% and 16.3, 20.0 and 18.5% respectively. All extracts and partitions showed some antioxidant activity by TLC. PjEE showed good antioxidant activity by TP (104.52±17.08 μg gallic acid/mg) and DPPH (IC$_{50}$ 3.53±0.13 mg/ml) but moderate activity by ABTS (IC$_{50}$ 4.11±0.10 mg/ml, TE 1.28 μmol/mg), HP showed the best activity by TP (110.91±7.40 μg gallic acid/mg). PoEE and partitions showed little activity by TP (20.31±2.10 μg gallic acid/mg), DPPH (IC$_{50}$ 8.32±0.03 mg/ml) and ABTS (IC$_{50}$ 9.22±0.38 mg/ml), activity improved considerably in EAP (ABTS IC$_{50}$ 2.13±0.06 mg/ml, TE 2.18 μmol/mg; ABTS IC$_{50}$ 2.41±0.02 mg/ml) showing activity higher than vitamin E. Controls values were: vitamin E (DPPH IC$_{50}$ 2.87±0.032 mg/ml; ABTS IC$_{50}$ 0.38±0.03 mg/ml), TBQH (DPPH IC$_{50}$ 1.16±0.01 mg/ml; ABTS IC$_{50}$ 0.199±0.001 mg/ml) and quercetin (DPPH IC$_{50}$ 0.64±0.001 mg/ml; ABTS IC$_{50}$ 0.1136±0.001 mg/ml).

**Conclusions:** Both EE gave average yield as whole extracts. Antioxidant activity of PjEE and PoAP was demonstrated with significant difference from vitamin E (p<0.05), but it was less active than TBHQ and quercetin; EAP gave the highest activity.

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