Abstract.

The present study evaluates the chemical composition and biological activity of essential oils from five medicinal plants of the southern Amazon of Ecuador. The species studied were: *Siparuna aspera* (Ruiz & Pav), *Siparuna macrotepala* Perkins, *Piper leticianum* C. DC, *Piper augustum* Rudge and *Hedychium coronarium* J. Koenig. These species were collected from the Kutuku montains in the province of Morona Santiago.

The essential oils of *S. aspera, S. macrotepala, P. leticianum and P. augustum* has been obtained by fresh steam leaves distillation and the essential oil of *H. coronarium* has been obtained by steam rhizome distillation.

The chemical characterization was performed by GC (Gas Chromatography) and GC-MS (gas chromatography-mass spectrometry). The most abundant compounds were: *S. aspera*; germacrene D 23.272%, bicyclogermacrene 7.831%, α-pinene 6.958%, δ-cadinene 4.653%, δ-elemene 4.526% e α-copaene 4.459%. *S. macrotepala*; germacrene D 41.124%, bicyclogermacrene 11.797%, δ-cadinene 5.008%, α-copaene 4.380%, β-caryophyllene 3.429%. *P. augustum*; germacrene D 41.124%, bicyclogermacrene 11.797%, δ-cadinene 5.008%, α-copaene 4; 380%, β-caryophyllene 3.429%. *P. leticianum*; β-caryophyllene 21.803%, germacrene D 9.007%, α-(E, E)-farnesene 5.098%, β -elemene 5.064%, bicyclogermacrene 3.959%, δ-cadinene 2.852%. *H. coronarium*; 1, 8-Cineole 33.690%, β-pinene D 29.954%, α-Pinene 9.968%, α-terpineol 5,705%. The structures of the main chemicals were confirmed by GC-MS and 1 H NMR.

The Antioxidant activity was evaluated by Spectrophotometric 1,1 –dyphenyl-2-picrylhydrazyl (DPPH), Spectrophotometric (2,2'-azinobis(3-ethylbenzothiazoline-6-sulfonic acid) diammonium salt) (ABTS), luminol-photochemiluminescence (PCL) assay and DPPH-(high performance) thin layer chromatography (DPPH-(HP) TLC). None of the oils showed a higher antioxidant activity compared to the natural reference: the essential oil of *Thymus vulgaris*.

The essential oil of *H. coronarium* showed good activity against *L. grayi, K. oxitoca* and *S. mutans* compared to the natural reference, the essential oil of *Thymus vulgaris*. 
Cytotoxic and mutagen protective activity of *H. coronarium* essential oil were evaluated by *Sacharomyces cerviseae* D7 Test. The cytotoxic effect was reached at a concentration of 0.6μL/plate while the protective mutagenic activity occurred in a concentration range of 0.5 y 2 μL/plate. The SOS-Chromo test demonstrated the absence of geno-toxicity.

Challenge test in cosmetic formulation with essential oil of *H. coronarium*, shows their utility to extend the shelf life.

Key words: Essential oil, *Siparuna aspera*, *Siparuna macrotepala*, *Piper Leticianum*, *Piper augustum*, *Hedychium coronarium*, *Piper leticiaunum*, GC, CG-MS, NMR, Antioxidant activity, Antimicrobial activity, (HP) TLC-bioautography, D7 Test, SOS.Chromo test, Challeng test.