Evaluation of the coagulating potential of the essential oils from *Hyptis carpinifolia* Benth. and *Lippia origanoides* Kunth.

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New inhibitors of snake venom toxins, especially those compounds that neutralize the local effects of accidental poisoning, are essential to complement or even replace traditional serum therapy. Plants provide great choices for scientific research and represent a growing market. Brazil has an exceptional variety of flora and the functional properties of the species that comprise this flora must be studied. *Hyptis carpinifolia* Benth., popularly known as rosemary, is a plant widely used in folk medicine for the treatment of diseases such as influenza, colds and rheumatism (1). *Lippia origanoides* Kunth. (Verbenaceae), an aromatic bush native to Central America and northern South America, is used in traditional medicine for the treatment of gastrointestinal and respiratory diseases (2). This study sought to assess the potential of the essential oils from *H. carpinifolia* Benth. and *L. origanoides* Kunth. for inhibiting the coagulation induced by the *Lachesis muta* (bushmaster) venom. The plant material was collected in the Garden of Medicinal Plants of the Federal University of Lavras (*L. origanoides*) and the municipality of Itumirim, MG, Brazil (*H. carpinifolia*). The essential oils were obtained by hydrodistillation of the leaves using a modified Clevenger apparatus (3) in the Laboratory of Organic Chemistry - Essential Oils of the same University. The inhibitory action of the essential oils against the clotting activity induced by snake venom was evaluated according to the method described by Valentin and Lambeau (4) using human citrated plasma (200 µL) provided by a clinical laboratory of the city of Lavras, MG. *Lachesis muta* (8 µg) venom was used for inducing the clotting of plasma. The essential oils used in the bioassay (0.6; 1.2 and 1.8 µL) were pre-incubated with plasma for 10 min at 37 °C prior to adding the venom. The percentage reduction in clotting time with both essential oils varied in a dose-dependent manner. For the oil from *H. carpinifolia* the reduction was 32 % for the lowest volume and 51 % for the 1.8 µL volume. For the oil from *L. origanoides*, the reductions were 40 % and 56 %, respectively. One can conclude that the essential oils had a pro-coagulant effect on human plasma. When added to plasma, these oils were probably capable of interacting with plasma lipids, whereas the proteins remained available for the coagulation cascade caused by the action of venom proteases.

1. Rodrigues, V. E. G.; Carvalho, D. A. Ciênc. Agrotec., 2001, **25**, 102-123.
2. Vicuña, G. C.; Stashenko, E. E.; Fuentes, J. L. Fitoterapia, 2010, **81**, 343-349.
3. Teixeira et al. Amer. J. Plant Sci., 2014, **5**, 1181-1190.
4. Valentin, E.; Lambeau, G. Biochemie, 2000, **82**, 815-831.

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