



# Hypochoeris brasiliensis: A new host for Lettuce mosaic virus

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*Hypochoeris brasiliensis* (Brazilian cat's ear or "almeirão do campo" in Portuguese) belongs to the family *Asteraceae* and is a weed in cultivated fields in Brazil. Plants of *H. brasiliensis* with severe mosaic were identified in 18 soybean fields located near Londrina, Paraná, Brazil (Figs. 1-2). Ten plants were collected and used for sap inoculation onto other plants of the same species and a series of indicator species and relevant crop species grown in the area (Table 1). Mosaic symptoms were observed after seven to ten days in inoculated plants of *H. brasiliensis* and *Nicotiana benthamiana*. Chlorotic lesions, which became necrotic, were observed in plants of *Chenopodium amaranticolor*. Mosaic and necrotic lesions were observed in lettuce (*Lactuca sativa*) cv. Trocadero, but not in iceberg lettuce cvs. Lucy Brown and Great Lakes 659 or butterhead lettuce cv. Gabi Mimosa. Transmission assays using aphids of the species *Uroleucon ambrosiae* and *Myzus persicae* and acquisition/transmission access periods of five minutes were successful in transmitting the virus to *H. brasiliensis*, and coupled with the host range results, suggested the presence of a potyvirus. Ultrathin sections of diseased *H. brasiliensis* leaves were stained with 2% uranyl acetate and lead acetate. Examination using a transmission electron microscope revealed the presence of flexuous particles, as well as cytoplasmic pinwheel inclusions (Fig. 3) which are characteristic of potyvirus infection (Edwardson, 1974).

Viral particles were purified from 100 g of diseased *H. brasiliensis* leaves as described by Lima *et al.* (1979) and Hammond & Lawson (1988). Viral RNA was extracted from the purified preparation using TRIzol reagent (Invitrogen, USA) following the manufacturer's instructions, and was used as a template for cDNA synthesis using an oligo-dT primer and SuperScript

III reverse transcriptase (Invitrogen). A 1.7 kb fragment encompassing the coat protein (CP) coding region and the 3' untranslated region (3'-UTR) was PCR-amplified using the oligo-dT primer together with a general potyvirus primer (5'-GGN AAY AAY AGY GGN CAZ CC-3') and cloned using the TOPO TA Cloning kit (Invitrogen). The sequence of the cloned fragment (GenBank Accession No. MK140596) had 95% nucleotide identity (100% coverage) with *Lettuce mosaic virus* (LMV) strain 0 (X97704), and 97% identity with the deduced amino acid sequence of the CP and 99% identity with the nucleotide sequence of the 3'-UTR.

Together, our results confirm the viral nature of the symptoms in *H. brasiliensis* and identify the causal agent as an isolate of LMV. The ubiquitous nature of *H. brasiliensis* in Brazil means that this species could be of significance as a reservoir host.

## References

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Figure 1

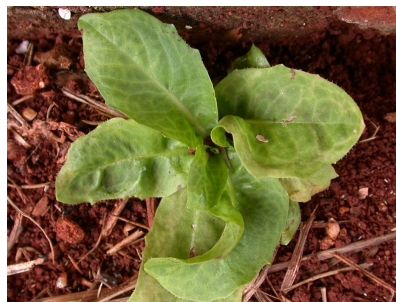


Figure 2

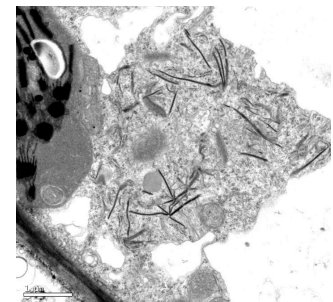


Figure 3

**Table 1.** Reaction of differential hosts to sap inoculation with an isolate of *Lettuce mosaic virus* from *Hypochoeris brasiliensis*.

Family	Species	Reaction*
<i>Solanaceae</i>	<i>Nicotiana glutinosa</i>	-
	<i>N. benthamiana</i>	m
<i>Chenopodiaceae</i>	<i>Chenopodium amaranticolor</i>	ll
<i>Asteraceae</i>	<i>Lactuca sativa</i> cv. Trocadero	m, n
	<i>L. sativa</i> cv. Americana Lucy Brown	-
	<i>L. sativa</i> cv. Gabi Mimosa	-
	<i>L. sativa</i> cv. Great Lakes 659	-
	<i>Hypochoeris brasiliensis</i>	m
<i>Amaranthaceae</i>	<i>Gomphrena globosa</i>	-
<i>Fabaceae</i>	<i>Glycine max</i> cv. Pintado	-
	<i>G. max</i> cv. CD 206	-
	<i>Phaseolus vulgaris</i> cv. Jalo	-
	<i>Vigna unguiculata</i>	-
	<i>Lupinus albus</i>	-

\* -, no symptoms; ll, local lesions; m, mosaic; n, necrosis

Figure 4

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