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Data Article

Data on the effect of Cytopiloyne against *Listeria monocytogenes* infection in miceChih-Yao Chung^{a,1}, Wen-Chin Yang^{b,c,d,e,1}, Chih-Lung Liang^f, Hsien-Yueh Liu^a, Shih-Kai Lai^a, Cicero Lee-Tian Chang^{a,*}^a Department of Veterinary Medicine, National Chung Hsing University, Taichung 402, Taiwan^b Agricultural Biotechnology Research Center, Academia Sinica, Taipei 11529, Taiwan^c Department of Aquaculture, National Taiwan Ocean University, Keelung 202, Taiwan^d Institute of Pharmacology, Yang-Ming University, Taipei 112, Taiwan^e Department of Life Sciences, National Chung-Hsing University, Taichung 402, Taiwan^f Department of Microbiology and Immunology, Institute of Microbiology and Immunology, Chung Shan Medical University, Taichung 402, Taiwan

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ABSTRACT

Cytopiloyne (CP), a novel polyacetylene compound extracted from *B. pilosa*, shows a multi-bioactivity, including immunomodulatory and antidiabetes. Here, we investigated the anti-*Listeria* effect of cytopiloyne in mice by assessing mortality, clearance of *L. monocytogenes*, and pathology examination. The data presented herein are supplemental to our research article entitled “Cytopiloyne, a polyacetylenic glucoside from *Bidens pilosa*, acts as a novel anticandidal agent via regulation of macrophages” [1].

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Specifications Table

Subject area	Biology
More specific subject area	Infection, immunity, and ethnopharmacology

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Type of data	Figure, image
How data was acquired	Survival rate monitor, microscope, and serial dilution plate method
Data format	Analyzed
Experimental factors	Control and Cytopiloyne intraperitoneal injections at various concentration
Experimental features	Resistance of C57BL/6J mice to <i>Listeria monocytogenes</i>
Data source location	Taichung, Taiwan
Data accessibility	Data is within this article

Value of the data

- Provides a mouse animal model for assessing the antimicrobial effect of herb compounds to intracellular pathogens.
- May be valuable for further studies to identify the molecular mechanism of CP involving in the intracellular survival of pathogens.
- May provide a new therapeutic strategy that uses a combination treatment of antimicrobial drugs and edible immunodulatory herbs to improve the efficacy of antimicrobial drug therapy on immunosuppressed patients.

1. Data

Here, we demonstrated that CP protected mice against *Listeria* infection by assessing the survival rate ($n=10$ in each groups; Fig. 1), gross pathology observation (Fig. 2A), the CFU counts in liver and spleen (Fig. 2B), and histopathology observations of frozen liver and spleen sections (Fig. 2C–N).

2. Experimental design, materials and methods

2.1. Chemicals, cells, and mice

B. pilosa plants were collected from Academia Sinica, Taiwan and authenticated by the Biodiversity Center of Academia Sinica. Cytopiloyne was prepared to 98% purity from whole plant of *B. pilosa* as previously described [2]. Briefly, Cytopiloyne was isolated on an RP-18 HPLC column by methanol extraction and ethyl acetate partition of whole *B. pilosa* plants. Structure and purity were confirmed by NMR spectra using a Bruker DMX-500 spectrometer and nuclear magnetic resonance determination, respectively. [2] *Listeria monocytogenes* (BCRC 15386) was obtained from Bioresource Collection and Research Center (Taiwan). Female 6–8 week-old C57BL/6J mice (National Laboratory Animal

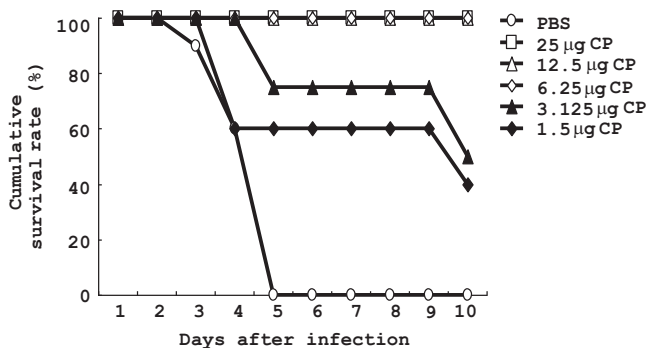


Fig. 1. Cytopiloyne (CP) dose-dependently protected mice against *L. monocytogenes* infection ($n=10$ in each groups).

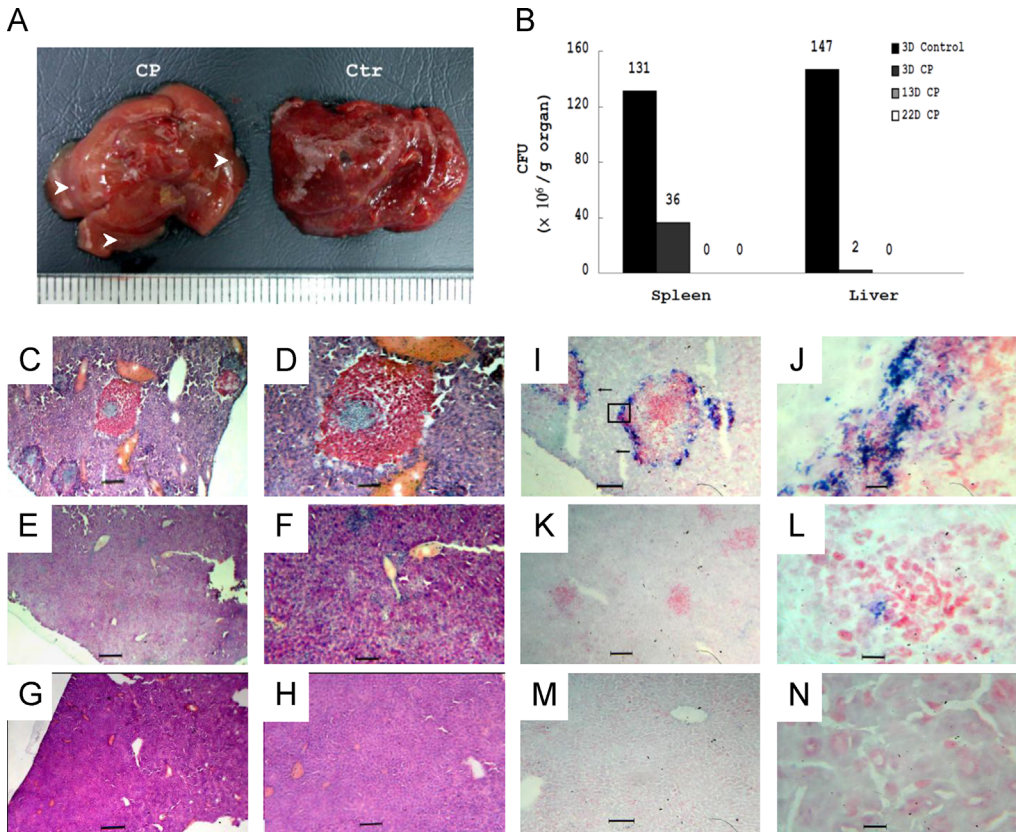


Fig. 2. Cytopiloyne (CP) lowered the CFU counts and severity of lesions in *Listeria*-infection mice. (A) Gross pathology observation of livers of PBS-(Ctr) and CP-treated mice at 3 days post infection. Diffuse microabscesses were observed in liver of PBS-treated (Ctr) mice, while only focal microabscesses indicated by arrows were noted in CP-treated (CP) mice. (B) CP lowered the CFU counts in liver and spleen ($n=3-6$ in each groups). (C–H) Histopathology observation (H and E) of livers of PBS-(C and D, at 3 days post infection) and CP-treated (E and F, at 3 days post infection; G and H, at 13 days post infection) mice. C, E, and G: $100\times$; D, F, and H: $400\times$. (I–N) Histopathology observation (Gram staining) of livers of PBS-(I and J, at 3 days post infection) and CP-treated (K and L, at 3 days post infection; M and N, at 13 days post infection) mice. I, K, and M: $400\times$; J, L, and N: $1000\times$.

Center, Taiwan) were maintained and handled according to the guidelines of Academia Sinica Institutional Animal Care and Utilization Committee.

2.2. *Listeria* challenge

Six groups of 6 to 8-week-old C57BL/6J mice received intraperitoneal injection of PBS (control) or PBS solution of CP (1.5, 3.125, 6.25, 12.5 and 25 $\mu\text{g}/\text{kg}$ BW) three times per week for 2 weeks. After 24 h, mice were intraperitoneally injected with *Listeria* (2×10^6 CFU). The animals were then observed every day for determination of mortality [3].

2.3. Clearance of *Listeria* and histopathology examination

As described in Section 2.2, C57BL/6J mice received PBS (control) or PBS solution of CP (25 $\mu\text{g}/\text{kg}$ BW) for 2 weeks and were intraperitoneally injected with *Listeria* (2×10^6 CFU). The mice were then killed at 3, 13, and 22 days (if survival) post infection. Their liver and spleen were weighed and cut into 2 parts for CFU determination and histopathological examination. For CFU count, one part of the

liver and spleen were homogenized, diluted and plated on BHI agar incubated at 37 °C for 12–16 h. The rest of the organs were frozen for tissue section and then stained by H&E and Gram staining (Hucker–Conn method).

Acknowledgments

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at <http://dx.doi.org/10.1016/j.dib.2016.03.044>.

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