

# Colder Weather and Fewer Sunlight Hours Increase Alcohol Consumption and Alcoholic Cirrhosis Worldwide

[Meritxell Ventura-Cots](#), [Ariel E. Watts](#), [Monica Cruz-Lemini](#), [Neil D. Shah](#), [Nambi Ndugga](#), [Peter McCann](#), [A. S. Barritt 4th](#), [Anant Jain](#), [Samhita Ravi](#), [Carlos Fernandez-Carrillo](#), [Juan G. Abrales](#), [Jose Altamirano](#), [Ramon Batalle](#)

First published: 16 October 2018

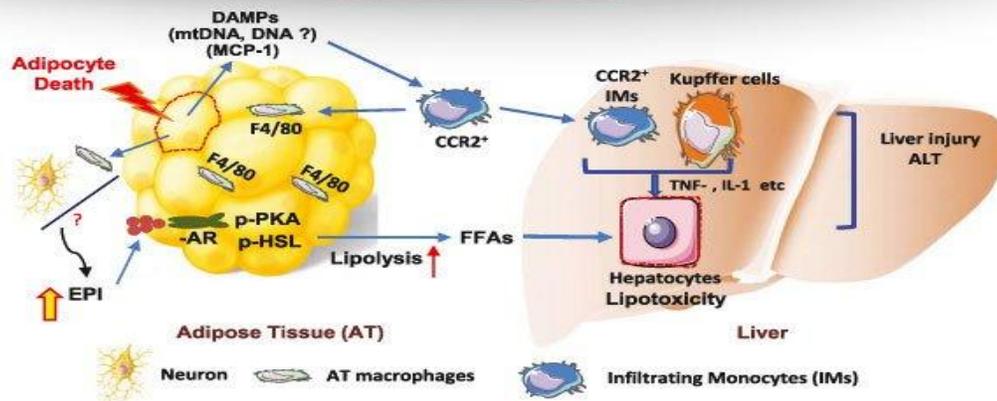
Supported by NIAAA U01AA021908 and U01AA020821 (R.B.). M.C.L. and J.A. are supported by the National System of Researchers (SNI) of the Mexican National Council for Science and Technology (CONACyT). M.V.C. and C.F.C. are recipients of a scholarship grant for study extension abroad, sponsored by the Spanish Association for the Study of the Liver (AEEH).

## Abstract

Risk of alcoholic cirrhosis is determined by genetic and environmental factors. We aimed to investigate if climate has a causal effect on alcohol consumption and its weight on alcoholic cirrhosis. We collected extensive data from 193 sovereign countries as well as 50 states and 3,144 counties in the United States. Data sources included World Health Organization, World Meteorological Organization, and the Institute on Health Metrics and Evaluation. Climate parameters comprised Koppen-Geiger classification, average annual sunshine hours, and average annual temperature. Alcohol consumption data, pattern of drinking, health indicators, and alcohol-attributable fraction (AAF) of cirrhosis were obtained. The global cohort revealed an inverse correlation between mean average temperature and average annual sunshine hours with liters of annual alcohol consumption per capita (Spearman's rho  $-0.5$  and  $-0.57$ , respectively). Moreover, the percentage of heavy episodic drinking and total drinkers among population inversely correlated with temperature  $-0.45$  and  $-0.49$  ( $P < 0.001$ ) and sunshine hours  $-0.39$  and  $-0.57$  ( $P < 0.001$ ). Importantly, AAF was inversely correlated with temperature  $-0.45$  ( $P < 0.001$ ) and sunshine hours  $-0.6$  ( $P < 0.001$ ). At a global level, all included parameters in the univariable and multivariable analysis showed an association with liters of alcohol consumption and drinkers among population once adjusted by potential confounders. In the multivariate analysis, liters of alcohol consumption associated with AAF. In the United States, colder climates showed a positive correlation with the age-standardized prevalence of heavy and binge drinkers. *Conclusion:* These results suggest that colder climates may play a causal role on AAF mediated by alcohol consumption.

# HEPATOLOGY

JOURNAL OF THE AMERICAN ASSOCIATION  
FOR THE STUDY OF LIVER DISEASES



How adipocyte death causes liver injury

IN THIS ISSUE:

Dark night of the soul: Cold weather, short days, and alcoholic cirrhosis

Serum biomarkers for the early detection of HCC

A shot to the kidneys: Cholemic nephropathy in liver disease

VOLUME 69 | MAY 2019

[Volume69, Issue5](#)

May 2019

Pages 1916-1930