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# Yale study suggests evolutionary source of alcoholism's accidental enemy

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Some change in the environment in many East Asian communities during the past few thousand years may have protected residents from becoming alcoholics, a new genetic analysis conducted by Yale School of Medicine researchers suggests.

The study by Hui Li and others in the laboratory of Kenneth Kidd, professor of genetics, psychiatry and ecology & evolutionary biology, will be released April 2, in the journal *PloS One*.

Scientists have long known that many Asians carry variants of genes that help regulate alcohol metabolism. Some of those genetic variants can make people feel uncomfortable, sometimes even ill, when drinking small amounts of alcohol. As a result of the prevalence of this gene, many, but not all, communities in countries such as China, Japan and Korea have low rates of alcoholism.

Last year Kidd's team reported evidence that recent natural selection in East Asia had caused one particular variant of the alcohol-regulating gene to become common. In this new paper Li and others in Kidd's team analyzed this variant in the DNA of individuals in many different population groups in several more East Asian countries.

They uncovered evidence that the variant became widespread through natural selection in only some of those East Asian populations — specifically, the Hmong- and Altaic-speaking groups. Those genetic clues, say the scientists, suggest that something was different in the

environment of those populations and that the genetic difference assisted survival in that environment. The researchers have not yet identified that environmental difference and say the genetic change could be triggered by any number of factors, such as the emergence of some new parasite.

That these populations turn out to be less prone to the ravages of demon rum, says Kidd, “is just a serendipitous event” of evolution. “What this finding does is highlight that something important in recent human history has affected the genetic composition of many East Asian populations,” he notes.

Kidd’s team was studying a variant of one of a set of related genes that code for alcohol dehydrogenases, enzymes that help in metabolism of alcohols, including ethanol. Variants of those enzymes have been known for many years to protect the individuals carrying them against alcoholism.

The particular gene studied, a variant of the ADH1B gene, is very common in some East Asian communities, as high as 90 percent in some areas.

But he also noted that lower rates of alcoholism in many of the Asian communities may well be due to cultural as well as genetic causes.

“If a large part of the people got sick after they ate one particular food or drank a particular drink, you would not find many social situations where that food was served,” Kidd said.

Source: Yale University