

# Impact of coffee on liver enzymes: Results from a community-based cohort study

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## Objectives:

Coffee intake has been noted a beneficial effect of liver-associated laboratory tests. We used longitudinal data from the community-based study to investigate whether increased coffee intake could play a role in reducing liver enzymes.

## Method:

We conducted a community-based cohort study since August 2013 in four Taiwanese districts. The Participants were scheduled to have an annual comprehensive health examination. Their lifestyle information was assessed by face-to-face interview questionnaires. The frequency of coffee consumption was recorded as never, occasionally, 1-6 days per week, and daily. The amount of coffee consumption was recorded as 0, < 1, 1 to <2, and ≥ 2 cups per day (1 cup = 250 ml). The participants who had AST or ALT levels ≥ 200 U/L were excluded for presumed acute liver injury. Logistic regression models based on generalized estimating equations were used to estimate the association between elevated liver enzymes and coffee intake after adjusting for known correlates.

## Results:

The 5743 adult residents (median age 59 years) were enrolled in this study. At baseline, 734 (12.8%) participants and 179 (3.1%) participants had seropositive to HBsAg and anti-HCV, respective. Median interquartile range duration of follow-up was 24 (14-27) months. A total of 10230 visits were analyzed (Table 1). Elevated AST and ALT (>upper normal limit) were documented in 992 (9.7%) visits and 1275 (12.5%) visits, respectively. After adjusting for age, sex, body mass index, hepatitis B, hepatitis C, and alcohol intake, increased frequency of coffee consumption was less likely to present elevated AST (1-6 days per week vs. nonconsumers, OR = 0.71, p=0.001; daily vs. nonconsumers, OR = 0.72, p= 0.002), and elevated r-GT (daily vs. nonconsumers. OR = 0.85. p = 0.027), but not elevated ALT (Table 2). After adjustment, increased amount of coffee consumptions were also less likely to present elevated AST (1 to <2 cups per day vs. nonconsumers, OR = 0.71, p <0.001; ≥ 2 cups per day vs. nonconsumers, OR = 0.59, p= 0.003), but not elevated ALT or r-GT.

## Conclusions:

Increased coffee consumption, no matter frequency or amount, appear to be associated with reduced levels of AST even in an HBV- and HCV-endemic area. Additional studies are needed to evaluate their impact on subsequent liver-related outcomes.

Table 1. Baseline characteristics of study participants by gender

	Total N = 5743	Male N = 2051	Female N = 3692	
Age	57.5±13.1	58.6±13.7	56.9±12.8	<0.001
BMI, kg/m <sup>2</sup>	24.8±3.9	25.5±3.7	24.5±3.9	<0.001
Alcohol intake, %				
Never	61.8	44.6	71.4	<0.001
Mild or Moderate	24.8	26.2	24.0	
Excess	13.4	29.2	4.5	
Smoking (Yes %)	24.8	54.9	8.1	<0.001
HBsAg positive %	12.8	13.7	12.3	0.149
Anti-HCV positive %	3.1	2.8	3.3	0.303
AST, U/L	24.9±10.7	26.6±11.4	24.0±10.2	<0.001
AST > ULN %	10.2	13.6	8.2	<0.001
ALT, U/L	24.9±16.1	28.6±17.5	22.9±14.9	<0.001
ALT > ULN %	13.4	20.2	9.6	<0.001
r-GT U/L	25.4±29.3	32.7±40.9	21.3±19.1	<0.001
r-GT > UNL %	25.4	38.0	18.4	<0.001
Coffee consumption, %				
Never	31.4	32.4	30.9	<0.001
Occasionally	28.3	30.4	27.2	
1-6 days per week	19.3	18.6	19.6	
Everyday	21.0	18.6	22.3	
Coffee consumption (Cups/day) %				
0	31.6	32.6	31.0	<0.001
< 1	37.3	38.4	36.8	
1 to < 2	25.4	21.5	27.4	
≥ 2	5.7	7.5	4.8	
No. of visits				
1	5743	2051	3692	
2	3059	1031	2028	
3	1428	442	986	
Total	10230	3524	6706	
Median follow-up duration, months	24.1	24.1	24.3	0.083

Table 2. The impact of coffee consumption on liver enzymes: multivariate analysis with OR estimates based on GEE logistic regression analyses.

	For AST > ULN		For ALT > ULN		For r-GT > ULN	
	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	
Coffee consumption (frequency)						
Never	1		1		1	
Occasionally	0.86 (0.72-1.02)	0.083	0.96 (0.81-1.13)	0.594	0.92 (1.00-1.00)	0.184
1-6 days per week	0.72 (0.58-0.89)	0.002	0.94 (0.78-1.14)	0.541	0.94 (0.82-1.07)	0.346
Daily	0.73 (0.59-0.90)	0.003	0.91 (0.75-1.10)	0.332	0.85 (0.73-0.98)	0.027
Coffee consumption (Cups/day)						
0	1		1		1	
< 1	0.86 (0.73-1.01)	0.064	0.97 (0.83-1.13)	0.681	0.92 (0.82-1.03)	0.139
1 to < 2	0.71 (0.58-0.86)	<0.001	0.89 (0.74-1.06)	0.183	0.89 (0.79-1.02)	0.094
≥ 2	0.59 (0.42-0.84)	0.003	0.97 (0.73-1.27)	0.806	0.88 (0.71-1.10)	0.259

Adjustment for age, sex, body mass index, HBV, HCV, alcohol consumption.