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The Effects of Alcohol Consumption on Metabolic Factors in the ALIVE-Ex Study Participants

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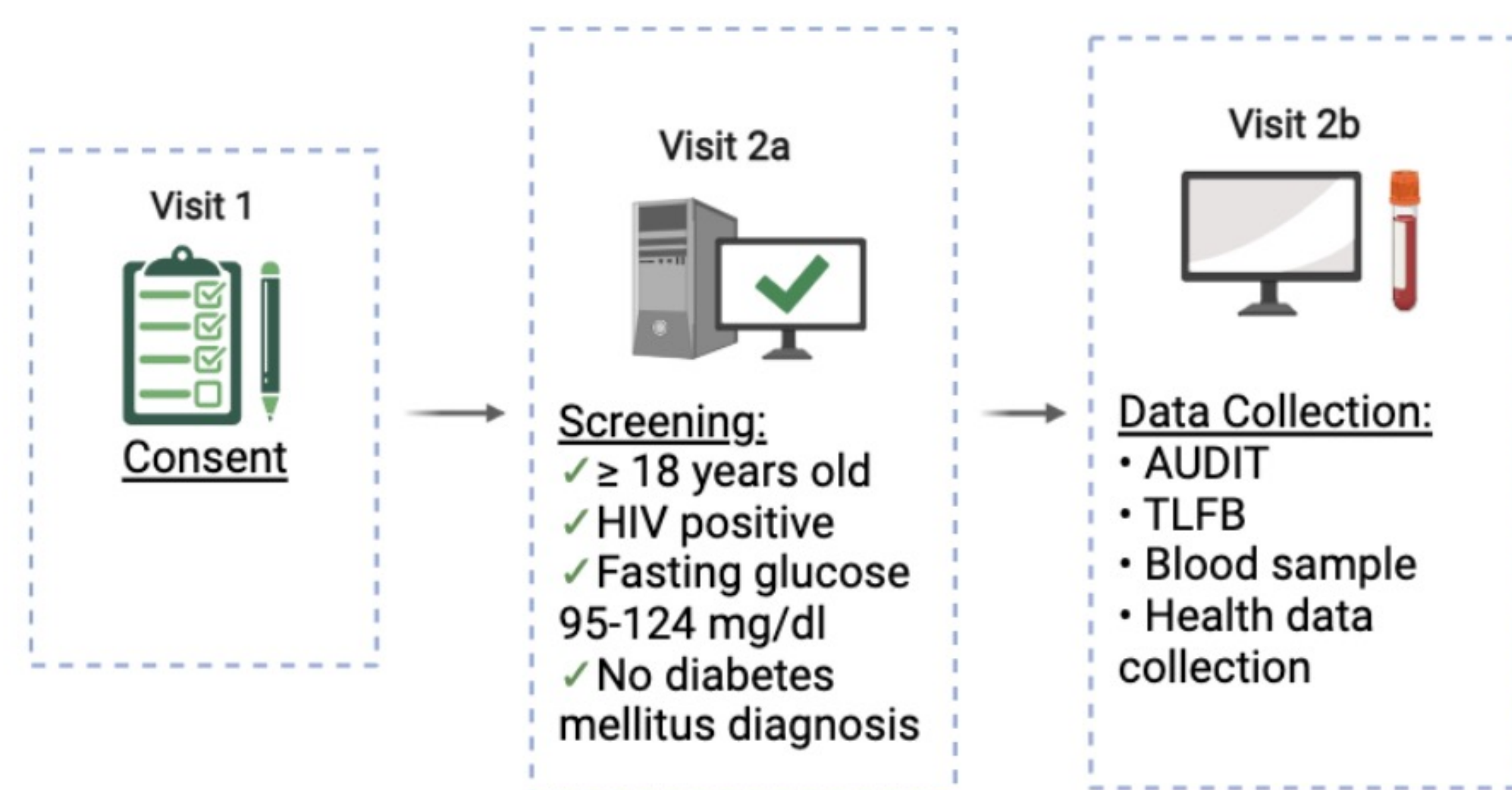LSU Health Sciences Center, Department of Physiology

Introduction

- At-risk alcohol use is common among people living with HIV (PLWH).
- PLWH are more likely to have metabolic comorbidities such as insulin resistance, pre-diabetes, or diabetes.
- Pre-intervention data analysis of the Alive-Ex study participants found no significant difference in AUDIT score and adiponectin.
- Adiponectin is a protein secreted mainly by white adipose tissue. It has anti-inflammatory properties and protects against insulin resistance.
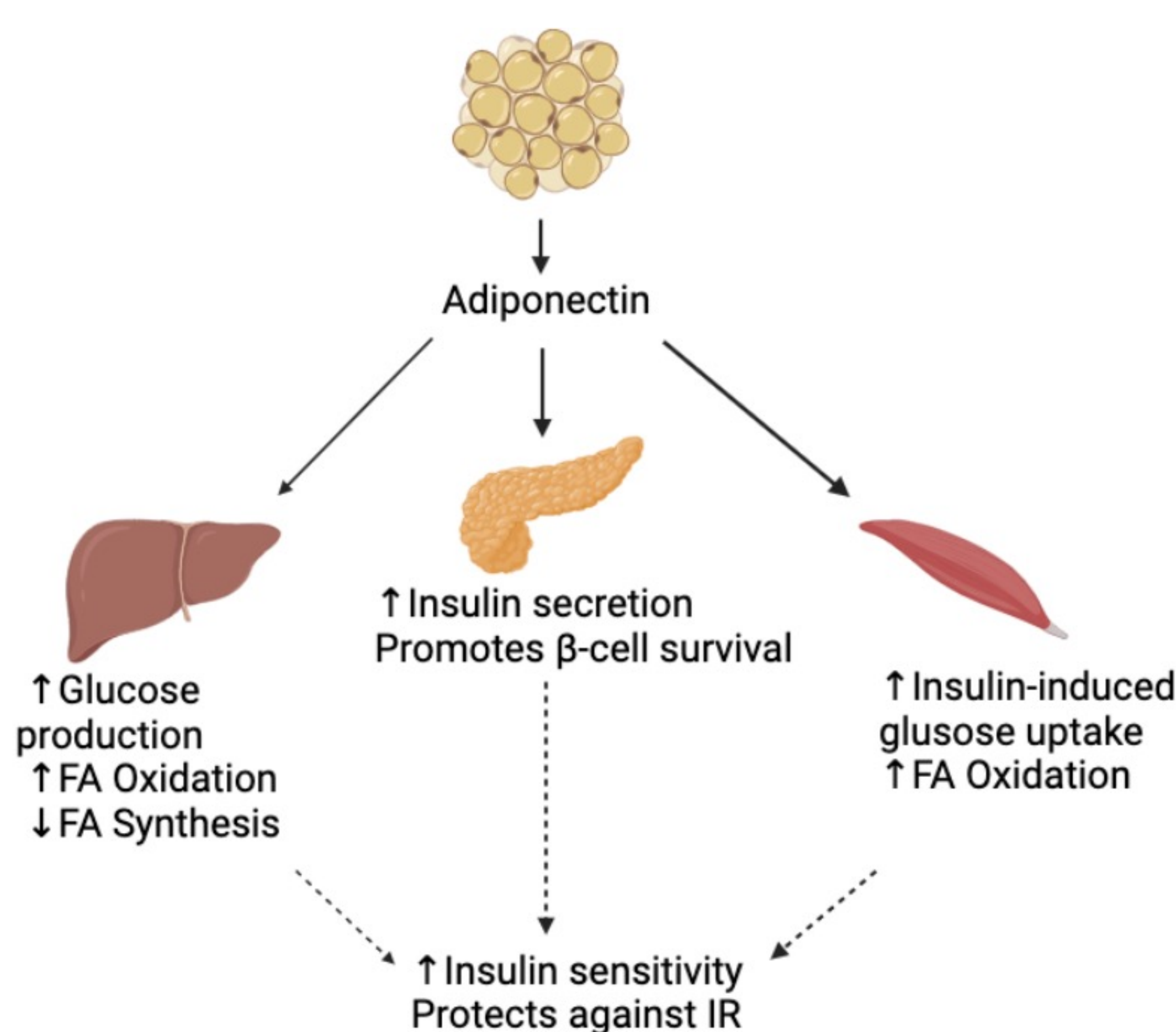
- The goals of the study were to assess how alcohol consumption and preferences affect fasting adiponectin levels and other metabolic factors in participants from the Alive-Ex study.

Methods

Screening:
✓ ≥ 18 years old
✓ HIV positive
✓ Fasting glucose 95-124 mg/dl
✓ No diabetes mellitus diagnosis

Data Collection:
• AUDIT
• TLFB
• Blood sample
• Health data collection

The AUDIT test assesses risky alcohol use while the Timeline Followback calendar is used to assess quantity of alcohol consumption in the last 30 days. Fasting glucose and insulin data is determined from the blood sample collected.

Demographics & Alcohol Use

| Demographics			
n=105			
% (n)			
Sex	Female	Male	
	30.5 (32)	69.5 (73)	
Race	African American	White	Other
	76.0 (79)	22.1 (23)	1.9 (2)
Age (years)	20-39	40-59	60+
	12.3 (13)	61.9 (65)	25.7 (27)
BMI	18.5-24.9	25-29.9	30+
	39.0 (41)	36.2 (38)	24.8 (26)

| Alcohol Measures		
AUDIT Score	At-Risk Alcohol Use ≥5	Low-Risk Alcohol Use <5
TLFB (g) 30 days	Heavy Alcohol Consumption	Non-Heavy Alcohol Consumption
Females	>425.81 grams	<425.81 grams
Males	>851.62 grams	<851.62 grams

Adiponectin & AUDIT Score
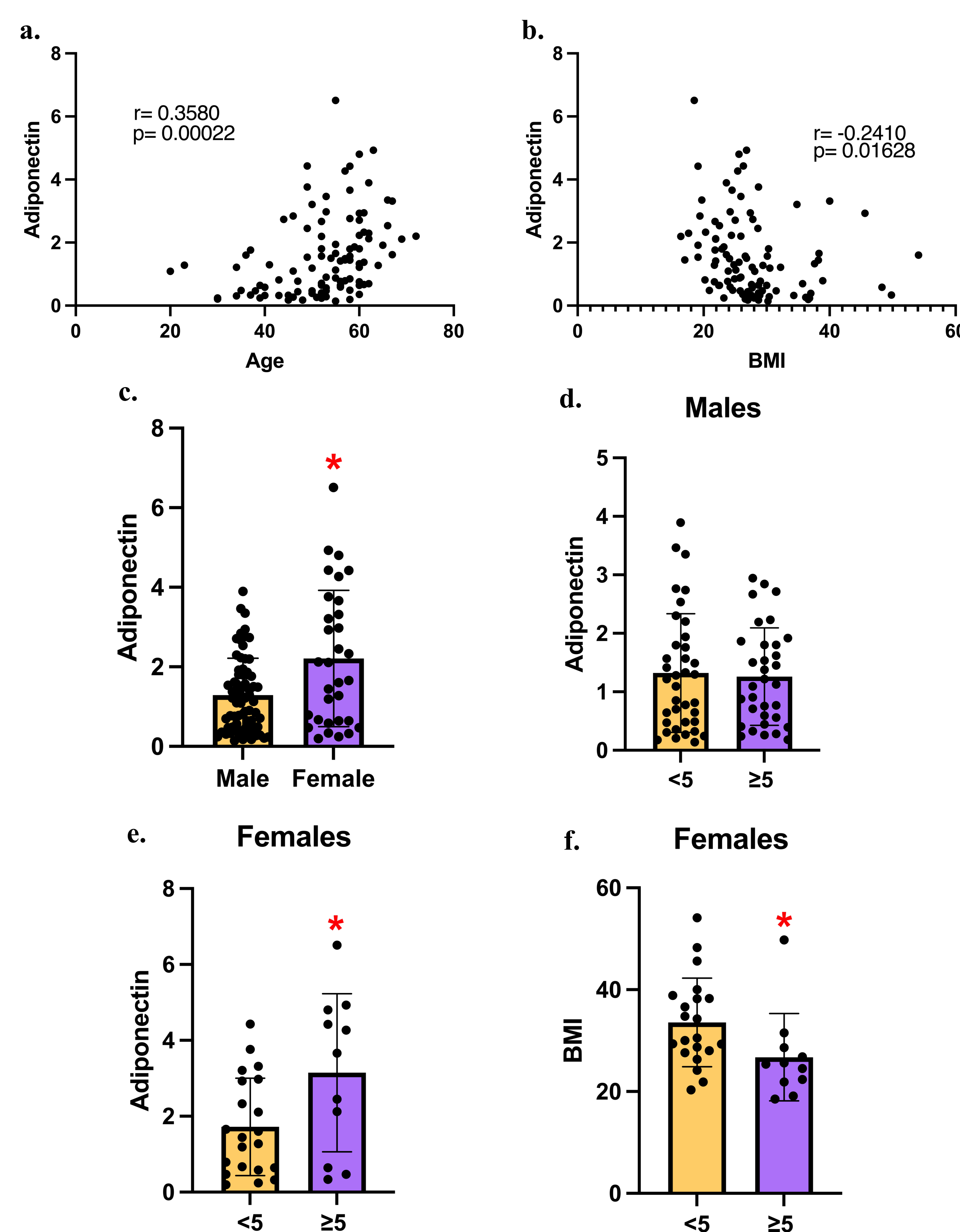
Figure 1. Adiponectin levels. a-c. Relationships between adiponectin and age, BMI, and sex are shown. **d-e.** Adiponectin is higher in female PLWH with AUDIT ≥ 5. No significant relationship is seen in males. **f.** Female PLWH with AUDIT ≥ 5 have lower BMI.

Alcoholic Beverage Preference
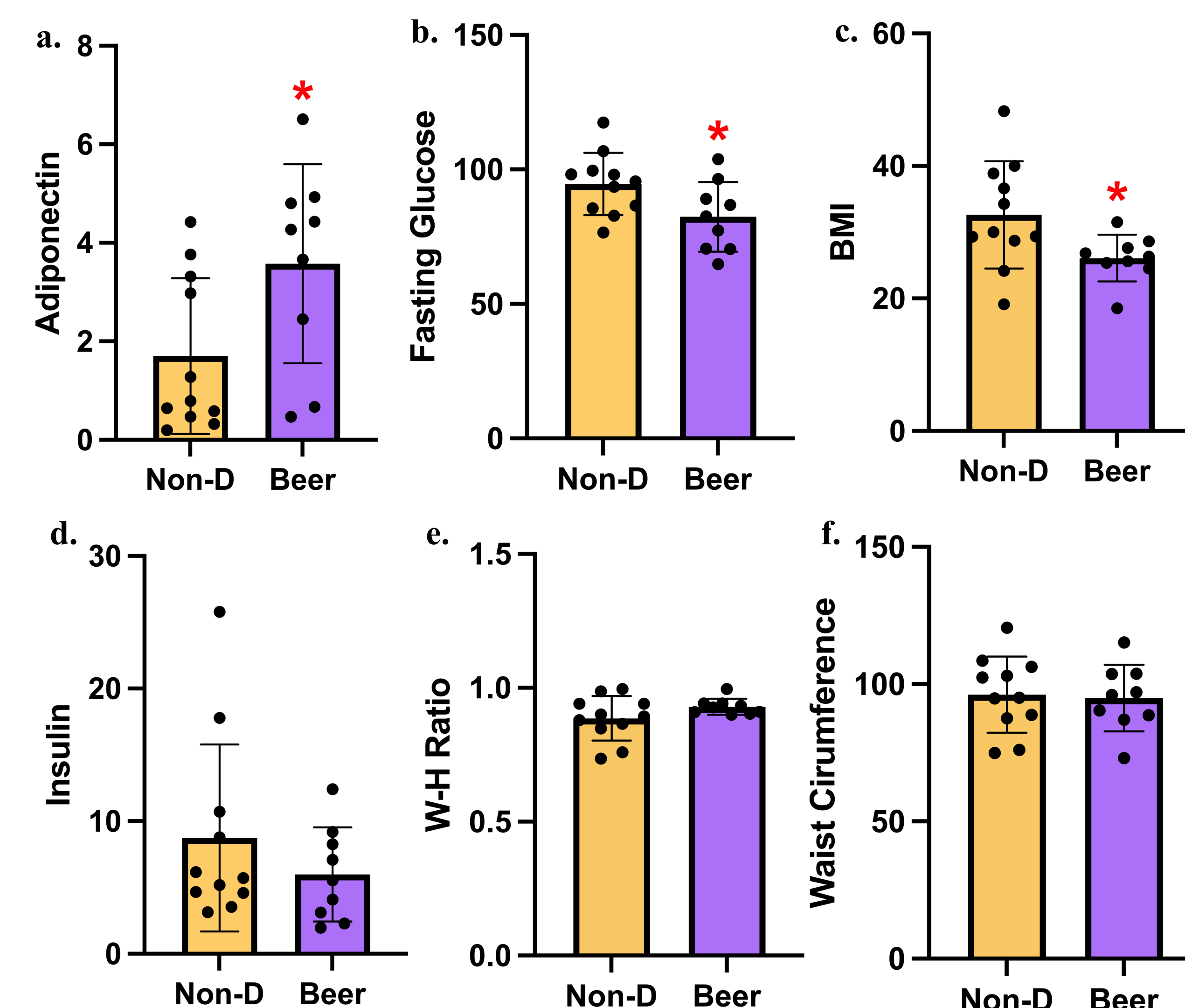
Figure 2. Metabolic factors in females who prefer. a. Female PLWH who drink beer have higher adiponectin levels than non-drinking females. **b-c.** The fasting glucose and BMI are significantly lower in females who drink beer. **d-f** Insulin, waist-hip ratio, and waist circumference are not significantly different between females who drink beer and non-drinkers.

Adiponectin & Consumption Levels
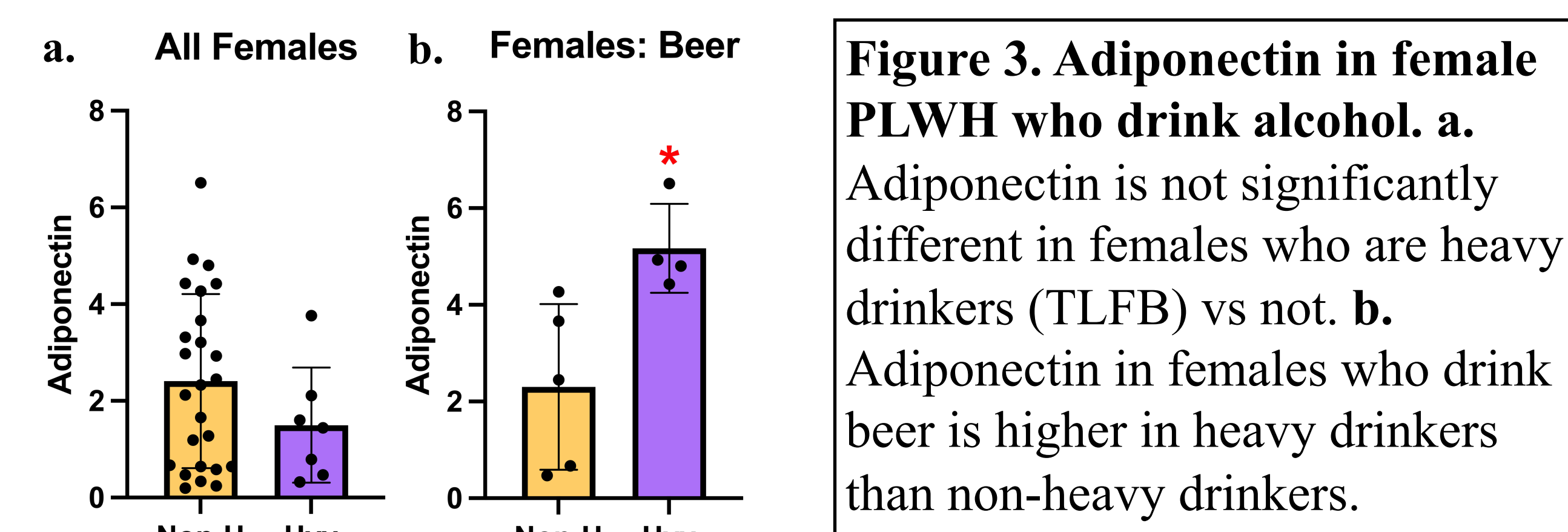
Figure 3. Adiponectin in female PLWH who drink alcohol. a. Adiponectin is not significantly different in females who are heavy drinkers (TLFB) vs not. **b.** Adiponectin in females who drink beer is higher in heavy drinkers than non-heavy drinkers.

Conclusion

- In PLWH, fasting adiponectin levels are positively correlated with age, negatively correlated with BMI, and higher in females than males.
- Female PLWH with at-risk alcohol use (AUDIT ≥5) have higher adiponectin levels and lower BMI. This was not observed in males.
- Female PLWH who prefer beer had higher adiponectin, lower fasting glucose, and lower as BMI compared to females that did not drink alcohol.
- These data suggest that sex and alcohol beverage preferences and consumption patterns affect adiponectin levels which may alter glucose regulation in PLWH.
- In PLWH, alcohol beverage preferences may affect adiponectin levels through a mechanism that is independent of fasting glucose and insulin levels.
- Future studies should explore the effects of other alcohol types on metabolic factors in male and female PLWH.