Dietary Patterns Associated with Magnetic Resonance Imaging–determined Liver Fat Content in a German General Population Study.

M. Koch, PhD1, J. Borggrefe, MD2, J. Barbaresko, MS1,3, G. Groth, MD4, G. Jacobs, PhD4, S. Siegert, MS1, W. Lieb, MD1, M. J. Müller, MD1, A. Bosy-Westphal, MD5, M. Heller, MD4 and U. Nothlings, DrPH1,3

1Christian-Albrechts University Kiel, Kiel, Germany, Kiel, Germany, 2University of Cologne, Cologne, Germany, 3Rheinische Friedrich-Wilhelms-University Bonn, Bonn, Germany, Bonn, Germany, 4University Medical Center Schleswig-Holstein, Kiel, Germany, Kiel, Germany, 5University of Hohenheim, Stuttgart, Germany, Stuttgart, Germany

INTRODUCTION: The association between diet and fatty liver disease (FLD) has predominantly been analyzed for single nutrients or foods, and findings have been inconsistent. We aimed to compare associations of hypothesis-driven and exploratory dietary pattern scores with liver fat content.

METHODS: Liver fat was measured by using magnetic resonance imaging as liver signal intensity (LSI) in a population-based, cross-sectional study that included 354 individuals. We applied partial least-squares regression to derive an exploratory dietary pattern score that explained variation in both, the intake of 38 food groups, which were assessed by using a food-frequency questionnaire, and LSI. The hypothesis-driven score was calculated on the basis of published studies. Multivariable linear or logistic regression was used to investigate associations between dietary pattern scores and LSI or FLD.

RESULTS: A higher percentage of LSI variation was explained by the exploratory (12.6%) compared with the hypothesis-driven (2.2%) dietary pattern. Of the 13 most important food groups of the exploratory dietary pattern, intakes of green and black tea, soups, and beer were also individually associated with LSI values. A 1-unit increase in the exploratory dietary pattern score was positively associated with FLD (OR: 1.56; 95% CI 1.29, 1.88). Furthermore, a 1-unit increase in the hypothesis-driven dietary pattern score, which consisted of alcohol, soft drinks, meat, coffee, and tea, was positively associated with FLD (OR: 1.25; 95% CI 1.10, 1.43).

CONCLUSIONS: We defined a hypothesis-driven dietary pattern and derived an exploratory dietary pattern, both of which included alcohol, meat (poultry), and tea, associated with liver fat content independent from confounders, which should be explored in prospective studies.