# New links found between tumour suppressor gene and prevention of diet-related liver cancer



New research highlights a significant breakthrough in understanding the progression of fatty liver disease to liver cancer, an issue increasingly prevalent in modern society. As cases of liver cancer related to fatty liver disease rise, particularly among individuals with diets rich in fats and sugars, experts are focusing on unearthing the biological mechanisms behind this troubling trend.

The collaboration between researchers at Glasgow Caledonian University, the Cancer Research UK Scotland Institute, and The Francis Crick Institute has illuminated the role of the tumour suppressor gene p53. This gene has been previously recognised for protecting the liver against various toxins; however, the latest findings indicate its essential function extends to mitigating the effects of unhealthy diets. Specifically, p53 works in conjunction with a gene known as TIGAR, which functions as an antioxidant. Together, they detoxify lipids in the liver, offering a protective buffer against dietary harm.

Dr Timothy Humpton, who leads the “Liver p53 lab” at Glasgow Caledonian University, stated, “This research has established a key role for p53 and TIGAR in protecting against the progression from liver disease to liver cancer. Targeting this through the use of antioxidants is of great interest for future therapies aiming to prevent liver cancer.” Humpton's remarks underline the potential for antioxidant therapy to act as a novel intervention strategy against liver cancer, particularly given the current lack of effective treatments available to halt the advancement of fatty liver disease.

Fatty liver disease often goes undiagnosed due to its asymptomatic nature, which complicates timely intervention. According to Dr Humpton, many individuals are unaware that a poor diet, alongside insufficient exercise, can precipitate this condition, making it critical to raise public awareness about its risks. “It’s not just people who drink alcohol that are susceptible,” he noted. Current prognoses for liver cancer patients remain grim, mainly because the disease often progresses unnoticed to advanced stages before diagnosis.

The implications of diet on liver health are corroborated by a study from the UK Biobank, which revealed a strong correlation between high sugar intake and increased risks of end-stage liver disease and mortality among individuals with non-alcoholic fatty liver disease (NAFLD). This research points to a broader narrative where modern dietary habits are deeply intertwined with liver health outcomes.

Other studies have echoed these findings. One significant piece of research involving nearly 100,000 postmenopausal women found that those consuming one or more sugar-sweetened beverages daily faced a substantially heightened risk of liver cancer and chronic liver disease mortality compared to those limiting such beverages. Similarly, a study from King’s College London established that high-fat, high-sugar diets lead directly to fat accumulation in the liver, paving the way for the onset of serious liver complications.

In light of these developments, researchers are hopeful that innovative treatments targeting the biological processes unveiled in the latest study could lead to effective strategies for preventing liver cancer and combating the deleterious effects of modern dietary patterns.

The research findings are documented in JHep Reports, a notable journal dedicated to the fields of Gastroenterology and Hepatology, affirming the significance of these insights within the wider medical community.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://www.independent.co.uk/life-style/health-and-families/health-news/liver-cancer-causes-sugar-fat-b2767498.html), [[4]](https://www.mdpi.com/2072-6643/14/24/5335)
* Paragraph 2 – [[1]](https://www.independent.co.uk/life-style/health-and-families/health-news/liver-cancer-causes-sugar-fat-b2767498.html), [[2]](https://www.reuters.com/business/healthcare-pharmaceuticals/aligos-fatty-liver-disease-treatment-meets-main-goal-mid-stage-study-2024-09-19/), [[5]](https://jamanetwork.com/journals/jama/fullarticle/2807987)
* Paragraph 3 – [[3]](https://nutritionj.biomedcentral.com/articles/10.1186/s12937-023-00897-y), [[6]](https://www.brunel.ac.uk/news-and-events/news/articles/Liver-fat-directly-linked-to-type-2-diabetes-new-study-shows)
* Paragraph 4 – [[7]](https://www.kcl.ac.uk/news/high-fat-high-sugar-diet-increases-development-of-liver-disease-study-finds)

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3. <https://nutritionj.biomedcentral.com/articles/10.1186/s12937-023-00897-y> - A large prospective analysis from the UK Biobank found that higher intake of free sugars and lower intake of non-free sugars or fibre were significantly associated with increased risks of end-stage liver disease and mortality in patients with non-alcoholic fatty liver disease (NAFLD).
4. <https://www.mdpi.com/2072-6643/14/24/5335> - A study in the UK Biobank cohort examined the association between dietary patterns and the risk of non-alcoholic fatty liver disease (NAFLD), cirrhosis, and liver cancer, highlighting the impact of diet on liver-related health outcomes.
5. <https://jamanetwork.com/journals/jama/fullarticle/2807987> - A study involving 98,786 postmenopausal women found that those consuming one or more sugar-sweetened beverages per day had a significantly higher risk of liver cancer and chronic liver disease mortality compared to those consuming three or fewer servings per month.
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7. <https://www.kcl.ac.uk/news/high-fat-high-sugar-diet-increases-development-of-liver-disease-study-finds> - A study from King's College London found that consuming a high-fat, high-sugar diet leads to fat accumulation in the liver, causing damage that can progress to non-alcoholic fatty liver disease, cirrhosis, and liver cancer.