# Article information:

Frontiers | Improved pharmacokinetics of tenofovir ester prodrugs strengthened the inhibition of HBV replication and the rebalance of hepatocellular metabolism in preclinical models
<https://www.frontiersin.org/journals/pharmacology/articles/10.3389/fphar.2022.932934/full>

# Article summary:

1. Tenofovir ester prodrugs, such as tenofovir disoproxil fumarate (TDF), tenofovir alafenamide fumarate (TAF), and tenofovir amibufenamide fumarate (TMF), have been developed to improve the pharmacokinetics of tenofovir and enhance its antiviral activity against hepatitis B virus (HBV).

2. The study investigated the relationships among TFV prodrug structures, pharmacokinetic characteristics, metabolic activations, and pharmacological responses using TDF, TAF, and TMF as probes in preclinical models.

3. Results showed that TMF had greater plasma stability than TDF and comparable HBV inhibition potency with TDF at a lower dose, highlighting the importance of rational design in developing novel TFV ester prodrugs for improved efficacy and safety in treating HBV infections.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article discusses the development of tenofovir ester prodrugs for the treatment of hepatitis B virus (HBV) infection. It provides a detailed overview of the currently marketed prodrugs, including tenofovir disoproxil fumarate (TDF), tenofovir alafenamide fumarate (TAF), and tenofovir amibufenamide fumarate (TMF), and their pharmacokinetic properties. The article also describes in vitro and in vivo studies on the anti-HBV activity of these prodrugs.

One potential bias in the article is the lack of discussion on potential risks associated with the use of these prodrugs. While the article mentions that TDF has been associated with nephrotoxicity and bone toxicity, it does not delve into potential adverse effects of TAF or TMF. It is important to provide a balanced view of both the benefits and risks of these medications to ensure informed decision-making by healthcare providers and patients.

Additionally, the article focuses primarily on the positive aspects of the development of TFV ester prodrugs, such as improved safety and efficacy compared to TFV itself. However, it does not explore potential limitations or challenges in using these prodrugs in clinical practice. For example, there may be issues related to drug interactions, resistance development, or long-term safety that need to be considered.

Furthermore, while the article presents data from in vitro and in vivo studies on the anti-HBV activity of TDF, TAF, and TMF, it does not provide a comprehensive analysis of potential confounding factors or limitations in these studies. It is important to critically evaluate study design, sample size, statistical methods, and other factors that could impact the validity and generalizability of the findings.

Overall, while the article provides valuable information on the development of TFV ester prodrugs for HBV treatment, there are areas where a more critical analysis could enhance its credibility and usefulness for healthcare professionals and researchers. By addressing potential biases, providing a balanced perspective on benefits and risks, exploring limitations in study design and interpretation, and considering alternative viewpoints or counterarguments, the article could offer a more comprehensive understanding of this important topic.

# Topics for further research:

* Potential risks of tenofovir alafenamide fumarate (TAF) in hepatitis B treatment
* Drug interactions of tenofovir ester prodrugs in clinical practice
* Long-term safety concerns of tenofovir amibufenamide fumarate (TMF) for HBV infection
* Resistance development to tenofovir disoproxil fumarate (TDF) in hepatitis B treatment
* Limitations of in vitro studies on anti-HBV activity of TFV ester prodrugs
* Statistical methods in evaluating the efficacy of tenofovir ester prodrugs for hepatitis B virus infection

# Report location:

<https://www.fullpicture.app/item/cac8b4cec3088959c8e12b312156f1e4>