Jet lag and night shifts disturb our sleep cycles and molecular clocks. Could a drug one day reduce these effects?

There are clocks that regulate metabolism, for example, and others that control how genes make proteins. So it's not surprising that disruptions to our circadian rhythms—from jet lag or shift work, for example—can wreak havoc on our health.

Now scientists are working on ways to tailor treatments to our circadian rhythms. Drugs that specifically target the clocks themselves are being explored in the lab.

Some people swear by melatonin or light therapy, and you can influence your own rhythms by changing the timing of your meals and sleep. But scientists are after drugs that can target our molecular clocks directly.

Take KL001, for example. This compound affects a protein called CRY. Clock genes can switch on the production of CRY, and high levels of the protein can in turn switch off the clock genes.

KL001 works to keep levels of CRY protein high, which can affect the length of the circadian period. This can have a knock-on effect on genes in the liver that also run to a circadian rhythm. It can even control how liver cells make glucose, according to research on cells in a dish. In theory, a drug like this could help limit the effects of shift work on metabolic health, and potentially lower the risk of diabetes.

Unfortunately, we are likely some way off from being able to do this in people. But that doesn't mean it isn't a tantalizing idea worth investigating.

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