



New research casts doubt on monkeys as drug testing model

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FRAME is calling for increased investment in cell-based and computer methods of drug testing following new research that demonstrates serious flaws in an animal model.

Cynomolgus monkeys are considered a valuable species for drug testing because of their size and their relatively close genetic parallels with humans. Now new experiments to investigate how the liver handles the commonly-used painkiller paracetamol have revealed that cynomolgus monkeys are resistant to doses that would be fatal in humans.

The findings cast serious doubt on the use of these monkeys as an animal model for drug testing. The ability of human and monkey livers to cope with high paracetamol doses is very different so it is not possible to say reliably that these monkeys are suitable for testing other drugs.

Paracetamol overdose, either accidental or intentional, is the main cause of acute liver failure in the UK and the USA, often proving fatal. It has been assumed that, because of their similarity to humans, non-human primates like the cynomolgus monkey would react in a similar way to overdosing.

But it appears the monkeys possess a high capacity detoxification system within the liver, which works at much lower capacity in humans. Therefore cynomolgous monkeys are able to eliminate very high paracetamol doses efficiently and safely, but humans cannot.

FRAME Scientific Director Dr Gerry Kenna is now calling for more time and money to be invested in cell-based and computer models that would be more reliable than using non-human primates.

“This research highlights an important difference between cynomolgus monkeys and humans, which limits the value of this species for evaluation of human drug safety.

“Increasing use of non-human primates in safety testing of drug candidates is ethically undesirable. In view of the substantial cost of such studies, it can also be expected to increase markedly the cost of drug development. FRAME believes such studies should be considered only if they can be shown to be scientifically justifiable and there are no valid alternatives.

“Substantial progress is already being made in the development of *in vitro* and *in silico* methods which focus on human biology and human cell systems. It is more sensible to put new effort into them than to pursue animal models that have substantial flaws.”

A background paper with more details of the study is attached.

The research paper,
Metabolism by conjugation appears to confer resistance to paracetamol (acetaminophen) hepatotoxicity in the cynomolgus monkey, is available online.

<http://informahealthcare.com/doi/abs/10.3109/00498254.2014.973000>

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FRAME is the Fund for the Replacement of Animals in Medical Experiments.

It promotes the replacement of laboratory animals with non-animal methods, through better science.

Its vision is a world where non-animal methods are accepted as scientific best practice

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