



## LETTER TO EDITOR (VIEWERS CHOICE)

# PRESCRIBING PARACETAMOL? MIND THE STRENGTH AND FORMULATION!

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Paracetamol is a widely used anti-pyretic and analgesic drug for fever and pain in children. While it is safe at therapeutic doses, medication errors can lead to severe toxicity.<sup>1,2,3</sup> Here we report a child with acute liver failure due to medication errors of paracetamol. A 1-year-old male child presented with high-grade fever, cough and altered level of consciousness. The child had an outpatient consultation with a doctor two days ago for his cold and fever and was prescribed paracetamol suspension by him. Examination revealed tachypnea, tachycardia, fluid-responsive shock and altered sensorium. Hepatomegaly was observed with a liver span of 12.5 cm. Initial labs revealed elevated liver enzymes (SGOT 528 IU/L, SGPT 407 IU/L), deranged PT/INR (37.6/3.2) and a normal bilirubin. Infectious causes, including malaria, leptospirosis, dengue and viral hepatitis, were ruled out. Imaging showed hepatomegaly and minimal pleural effusion. The working diagnosis was infective hepatitis with acute liver failure and the child was started on N-acetylcysteine (NAC) and supportive care. On the third day of admission, the liver enzymes elevated further (SGOT >10,000 IU/L, SGPT >10,000 IU/L) and total serum bilirubin was 2.7 mg%. On further probing the history, the mother showed the paracetamol preparation that was given to the child before admission. While the prescribing doctor had prescribed a paracetamol suspension at a strength of 120 mg/5 ml, the mother administered paracetamol drops (150 mg/ml) she had used for the same child a few months back. The mother had administered paracetamol drops 5 ml (150 mg/ml = 600 mg) every six hours for 2 days, equating to 333 mg/kg/day for 2 days. The serum paracetamol levels analyzed on day 3 were normal. On day 5, the child's sensorium and liver function improved, enzyme levels declined, PT/INR normalized and NAC was discontinued. The mother was sensitized about various paracetamol strengths and formulations and the child was discharged the next week.

There are more than 661 brands of paracetamol available in India.<sup>3</sup> There may be an equal number of brands available in fixed-dose combinations. The commonly available paracetamol formulations and strengths are shown in Table 1. There has been a wide range of paracetamol strengths in its liquid formulations. Medication errors in prescribing or

dispensing or administering can endanger the life of the child, as in this case. In the USA, till the year 2011, a concentrated acetaminophen preparation containing 80 mg/0.8 ml was available, after which it was voluntarily withdrawn by the manufacturers and now only one concentration of acetaminophen suspension containing 160 mg/5 ml is available.<sup>4</sup> After the availability of a single liquid formulation in the USA, the medication errors were reduced significantly.<sup>5</sup> In India, though the availability of different strengths of liquid formulations in paracetamol offers convenience, it is also associated with significant medication errors. The prescribing doctors should clearly specify the strength and formulation of paracetamol. The dispensing chemist and the mothers should be sensitized about the various strengths and formulations of paracetamol available. This case emphasizes the need for standardization of liquid formulations of paracetamol to avoid medication errors.

**Table 1.** Common formulations and strengths of paracetamol available in India.

Sl. No	Formulation	Strengths available
1	Tablet	250 mg, 300 mg, 500 mg, 650 mg and 1000 mg
2	Drops (mg/ml)	100 mg, 125 mg, 150 mg
2	Syrup/Suspension (mg/5 ml)	120 mg, 125 mg, 156.25 mg, 250 mg, 375 mg and 500 mg
3	Suppository	80 mg, 125 mg, 170 mg and 250 mg
4	Injection	150 mg/ml
5	Infusion	1000 mg/100 ml

### Compliance with Ethical Standards

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**Conflict of Interest:** None

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