

# Efficacy of Genpar (paracetamol 1000 mg) infusion in the treatment of fever associated with viral, amoebic, bacterial infections, pneumonia, and enteric fever

Sanjay Chandak<sup>1</sup>, Satish Bhise<sup>1</sup>, Ramesh Pawar<sup>1</sup>, Rahul Bhutada<sup>2</sup>, C. Dinesh<sup>2</sup>, Pankaj Mittal<sup>3</sup>

<sup>1</sup>Department of Research, Laxmi Clinic, Balapur, Maharashtra, India, <sup>2</sup>Department of Research, Generic Healthcare Private Limited, Pune, Maharashtra, India, <sup>3</sup>Department of Regulatory Support, Generic Healthcare Private Limited, Pune, Maharashtra, India

**Correspondence:**

C. Dinesh, Department of Research, Generic Healthcare Private Limited, Naigaon (Maval), Ahirwadi, Old Mumbai Pune Highway, Maval, Pune - 412 106, Maharashtra, India.  
E-mail: support@ghpl.co

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## Introduction

Fever is one of the leading patient complaints during infection although there may be physiologic benefits of fever, it is also associated with arthralgia, myalgia, nausea, and vomiting. Treatment with antipyretics improves these accompanying symptoms<sup>[1]</sup> and reduces the patient's discomfort.<sup>[2]</sup> Both pharmacologic and non-pharmacologic methods like tepid sponging<sup>[3]</sup> have been used to reduce body temperature in

## ABSTRACT

**Background:** Fever is a common problem in adults visiting the casualty setting. Extensive studies have been done in children comparing the efficacy of various antipyretics. However, studies on the efficacy of antipyretic drugs in adults are very scarce. **Aim:** The present study evaluated the efficacy of genpar (Paracetamol 1000 mg) infusion for the treatment of fever associated with viral, amoebic, bacterial infections, pneumonia, and enteric fever. **Methods:** This prospective study was carried out at multicenter between September 2021 and January 2022. Patients irrespective of age and sex with leading sign of fever (oral temperature >38.5°C) were included in the study. Oral temperature was recorded at 30–35 min, 40–45 min, 60–65 min, and 90–95 min after drug administration. **Results:** Mean age of the patients was 31.46 ± 15.42 years. About 62% of patients were aged between 11 and 30 years. About 65% of the patients were males. The most common complaint was headache (49%) followed by fever (46%) and body pain (44%). The baseline oral temperature was 102.79 ± 0.68°F. There was a significant reduction in body temperature at 30–35 min, 40–45 min, 60–65 min, and 90–95 min when compared to baseline body temperature ( $P < 0.01$ ). **Conclusion:** Paracetamol IV infusion can be effective in immediate temperature control in emergency settings.

**Keywords:** Antipyretic, Paracetamol, Temperature

febrile patients. Extensive studies have been done on children comparing the efficacy of various antipyretics. These have included paracetamol, ibuprofen, nimesulide, ketoprofen, propacetamol, and dipyrone.

Although there are various studies on children, there is fewer number of studies on adults. The most of the available studies on paracetamol were carried out in endotoxin-induced febrile models<sup>[4-6]</sup> and others in intensive care patients.<sup>[7]</sup> Few studies have been done on oral diclofenac using varying doses<sup>[8]</sup> or comparing it with ibuprofen<sup>[9]</sup> or acetylsalicylic acid.<sup>[10]</sup> Intravenous ketorolac has also been studied as an antipyretic in adults.<sup>[11]</sup> The present study evaluated the efficacy of Genpar (Paracetamol 1000 mg) infusion for the treatment of fever.

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## Methods

This prospective study was carried out at multicenter from September 2021 to January 2022. Patients irrespective of age and sex with the leading sign of fever (oral temperature  $>38.5^{\circ}\text{C}$ ) were included in the study. The main exclusion criteria were a history of allergy to study medications and antipyretics within the previous 8 h, renal, hepatic, or hematologic disorders, bronchial asthma, peptic ulcer disease, and frequent vomiting. Pregnant or lactating women were also excluded from the study. All patients provided their written informed consent before enrollment.

Baseline oral temperature was recorded at enrollment. Patients received intravenous paracetamol 1000 mg free of cost to the patients. Intravenous paracetamol was given as an infusion over 15 min. The oral temperature was recorded at 30–35 min, 40–45 min, 60–65 min, and 90–95 min minutes after drug administration. All temperature recordings were done using a standard thermometer.

## Data analysis

Data were recorded into Microsoft® Excel worksheet 2007 and exported into SPSS v21.0 (IBM, USA) for statistical analysis. Categorical variables were expressed as frequency and percentages. Quantitative variables were expressed as mean and standard deviation and compared using paired *t*-tests at different time intervals.  $P < 0.05$  was considered statistically significant.

## Results

### General characteristics

One hundred patients were included in this study. Mean age of the patients was  $31.46 \pm 15.42$  years. About 62% of patients aged between 11 and 30 years [Table 1]. About 65% of the patients were males [Table 2].

### Complaints

The most common complaint was headache (49%) followed by fever (46%) and body pain (44%). About 94% of the patients had more than one complaint [Table 3].

### Diagnosis

About 29% of the patients had enteric fever followed by viral meningitis (23%), bronchitis (14%), malaria (12%), and viral fever (11%) [Table 4].

### Antipyretic efficacy

The baseline oral temperature was  $102.79 \pm 0.68^{\circ}\text{F}$ . There was a significant reduction in body temperature at 30–35 min, 40–45 min, 60–65 min, and 90–95 min when compared to baseline body temperature ( $P < 0.01$ ) [Table 5].

Table 1: Age distribution

| Age group (years) | Frequency         | Percentage |
|-------------------|-------------------|------------|
| $\leq 10$         | 1                 | 1.0        |
| 11–20             | 26                | 26.0       |
| 21–30             | 36                | 36.0       |
| 31–40             | 14                | 14.0       |
| 41–50             | 7                 | 7.0        |
| $\geq 50$         | 16                | 16.0       |
| Mean age          | 31.46 $\pm$ 15.42 |            |

Table 2: Sex distribution

| Sex    | Frequency | Percentage |
|--------|-----------|------------|
| Male   | 65        | 65.0       |
| Female | 35        | 35.0       |

Table 3: Complaints

| Complaints            | Frequency | Percentage |
|-----------------------|-----------|------------|
| Headache              | 49        | 49.0       |
| Fever                 | 46        | 46.0       |
| Body pain             | 44        | 44.0       |
| Vomiting              | 33        | 33.0       |
| Nausea                | 30        | 30.0       |
| Cough                 | 22        | 22.0       |
| High fever            | 15        | 15.0       |
| Severe neck stiffness | 15        | 15.0       |
| Severe fever          | 13        | 13.0       |
| Congestion            | 8         | 8.0        |
| Body stiffness        | 7         | 7.0        |
| Muscle stiffness      | 3         | 3.0        |

Table 4: Diagnosis of disease

| Diagnosis        | Frequency | Percentage |
|------------------|-----------|------------|
| Enteric fever    | 29        | 29.0       |
| Viral meningitis | 23        | 23.0       |
| Bronchitis       | 14        | 14.0       |
| Malaria          | 12        | 12.0       |
| Viral fever      | 11        | 11.0       |
| Pneumonia        | 9         | 9.0        |
| Typhoid          | 2         | 2.0        |

Table 5: Body temperature post-treatment

| Time          | Temperature ( $^{\circ}\text{F}$ ) | P-value <sup>#</sup> |
|---------------|------------------------------------|----------------------|
| Pre-treatment | 102.79 $\pm$ 0.68                  |                      |
| 30–35 min     | 102.06 $\pm$ 0.67                  | <0.01                |
| 40–45 min     | 101.03 $\pm$ 0.62                  | <0.01                |
| 60–65 min     | 99.78 $\pm$ 0.58                   | <0.01                |
| 90–95 min     | 93.90 $\pm$ 21.65                  | <0.01                |

P-value compared at every time point with pre-treatment and pre-time point

## Discussion

Fever occurs as a response to a variety of infectious and non-infectious inflammatory conditions. It is due to abnormally high hypothalamic thermostatic caused by the actions of interleukin or pyrogenic cytokines on the hypothalamic thermoregulatory center. Although treating the underlying cause should be the primary objective, reducing the fever is also important because this decreases constitutional symptoms and the discomfort to the patient.

Peacock *et al.*<sup>[4]</sup> comparing intravenous and oral paracetamol, which showed a statistically significant difference in temperature in the first 2 h favoring intravenous over oral paracetamol. Similarly, another study done by Kett *et al.*<sup>[5]</sup> showed a significant reduction in temperature at 30 min from baseline by intravenous paracetamol 1000 mg in comparison with placebo. However, both these studies were done using endotoxin-induced febrile models. Another study done in an endotoxin-induced model showed oral paracetamol to have a greater effect than aspirin.<sup>[6]</sup>

In our study, we have no comparator group; however, IV infusion of paracetamol 1000 mg reduced temperature significantly within 30 min after administration.

## Conclusion

The present study concluded that the genpar (Paracetamol 1000 mg) IV infusion is found to be effective in acute temperature reduction in febrile patients. This may be a better and safer alternative in the treatment of the raised temperature cases.

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