



## CASE REPORT

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## A practical and applicable desensitization scheme for ciprofloxacin with a glass of water

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### Abstract

Desensitization is an immunological process that creates temporary tolerance to a drug, which disappears once treatment is discontinued. Ciprofloxacin is a commonly used antibiotic, particularly for chronic lung diseases, yet there are very few desensitization protocols for it. Two ciprofloxacin desensitization schemes were developed a long time ago. However, these protocols are multistep, time-consuming processes, due to which a new protocol is required. We would like to present the practical oral desensitization protocol that we use. We included two patients with cystic fibrosis and bronchiectasis who required ciprofloxacin due to the presence of *Pseudomonas aeruginosa* in their sputum cultures. The desensitization process was successful and well-tolerated. This protocol is important because it addresses a significant gap in the literature.

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### Introduction

Desensitization is the immunological process in which a temporary tolerance is established against the drug to which the individual is allergic. This tolerance disappears when the treatment is interrupted.<sup>1</sup> Desensitization, which was previously recommended only for IgE-mediated reactions, is now also recommended for non-IgE-mediated, non-immunological, and T cell-mediated late-type reactions. In desensitization, drug doses are increased every

15 min, not exceeding twofold.<sup>2</sup> There are different desensitization schemes defined for each antibiotic group. There is a desensitization scheme defined and widely used for chemotherapy agents in intravenous form.<sup>3</sup> However, there is still such a need for drugs in oral form. Two separate desensitization schemes for ciprofloxacin were defined a long time ago. However, these schemes are multistep processes requiring a long time.<sup>4,5</sup> Therefore, a new scheme is needed. We wanted to present the oral desensitization scheme that we use, which is practical.

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## Cases

### Case 1

A 38-year-old female patient diagnosed with cystic fibrosis had *Pseudomonas aeruginosa* in her sputum culture. Ciprofloxacin was recommended due to the bacteria's sensitivity to the drug. However, the patient had a history of hypersensitivity to ciprofloxacin 5 years ago. The patient experienced itching, redness, wheezing, and decreased blood pressure 20 min after taking the tablet. The skin prick test (2 mg/mL) was negative, while the intradermal test (0.006 mg/mL) was positive with ciprofloxacin. The patient underwent desensitization with ciprofloxacin tablets (Scheme 1). She had no complaints after desensitization and completed her treatment (Figure 1).

One tablet of ciprofloxacin was diluted with 100 cc of water. 500 mg/100 mL = 5 mg/mL. There was 15 min between each step.	
Drug dosage	Cumulative dosage
1 cc	5 mg
2 cc	15 mg
4 cc	35 mg
8 cc	75 mg
16 cc	155 mg
32 cc	315 mg
37 cc	500 mg



**Figure 1** Case 1 intradermal test (0.006 mg/mL) was positive with ciprofloxacin.

### Case 2

A 49-year-old female patient diagnosed with bronchiectasis had *P. aeruginosa* in her sputum culture. Ciprofloxacin was recommended due to the bacteria's sensitivity. However, the patient had a history of hypersensitivity to ciprofloxacin 2 years ago. She developed urticaria 1 h after taking the tablet. The skin prick test (2 mg/mL) was negative, whereas the intradermal test (0.0006 mg/mL) was positive with ciprofloxacin. The patient underwent desensitization with ciprofloxacin tablets (Scheme 1). She had no complaints after desensitization, and completed her treatment (Figure 2).

## Discussion

The most common hypersensitivity reaction to ciprofloxacin is anaphylaxis. False-positive skin tests may occur. In the current situation, it is recommended to avoid the drug responsible for hypersensitivity. If the drug is necessary, desensitization is considered.<sup>6</sup> Oral administration reduces hospital costs and allows the patient to use the drug at home. There are very few desensitization schemes described in the literature, and they take around 4-6 h.<sup>4,5</sup> Therefore, a new and rapid desensitization scheme is needed. Therefore, this easy-to-apply and practical scheme was tested on two separate patients, and in both cases, desensitization and treatment were completed without any problems.

## Authors' Consent for Publication

All authors approve this manuscript to be submitted to Journal.



**Figure 2** Case 2 intradermal test (0.0006 mg/mL) was positive with ciprofloxacin.

## Availability of Data and Materials

The data that support the findings of this study are not publicly available due their containing information that could compromise the privacy of research participants but are available from ZYK,İB, FY, MK.

## Authors Contributions

All authors were involved in the conceptualization, methodology of the study. ZYK,İB, FY, MK were involved in writing of original draft. The writing and reviewing process involved ZYK,İB, FY, MK.

## Conflict of Interest

The authors declare that they have no conflict of interest.

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