Although this overt inverse relationship has not been reported before now, C. albicans with targeted deletion of ERG3 or ERG11 showed increased susceptibility to amphotericin B and resistance to azoles.\textsuperscript{11} The altered azole MICs for these sequential azole-naive isolates suggest that azole resistance in this clone may be associated with amphotericin B resistance mechanisms. This may be attributed to the predisposition of C. glabrata to multidrug resistance involving unexposed antifungals.

The unexpected rapid loss and fluctuation of amphotericin B and fluconazole resistance in isolates 4–10 requires an explanation other than de novo emergence and recovery of resistance. Subpopulations with different resistance profiles are likely to have persisted in the gut and alternately invaded the bloodstream under the selective pressure. Alternatively, various subpopulations coexisted in the bloodstream, but only one of them was identified from blood cultures. This report highlights the adaptability of C. glabrata to long-term treatment with various antifungal agents. Considering its ability to acquire and retain multidrug resistance, combination therapy would be beneficial for prolonged C. glabrata fungaemia. In addition, Candida isolates from blood and normally sterile body fluids should be identified at the species level and susceptibility tests are recommended for all C. glabrata isolates recovered during prolonged antifungal treatment.

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**Transparency declarations**

None to declare.

**References**


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**Obtaining antibiotics without prescription in Spain in 2014: even easier now than 6 years ago**

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Sir,

We have read with special interest the paper by Zapata-Cachafeiro et al.\textsuperscript{1} about the practice, still continuing, of dispensing antibiotics without medical prescription in Spain. Zapata-Cachafeiro et al.\textsuperscript{1} found in their questionnaire-based study that 64.7% of the pharmacists acknowledged having undertaken dispensing of antibiotics without a medical prescription. In 2008, with the use of a mystery shopper, our group found that 45.2% of pharmacies sold an antibiotic without a medical prescription.\textsuperscript{2} Between January 2013 and February 2014 we used the same design and methodology with the aim of determining whether the practice of selling antibiotics without a medical prescription has changed in Spanish pharmacies. A mystery shopper presented requesting an antibiotic to 220 pharmacies in the Tarragona Health District, an area covering 596,508 inhabitants in a region of Catalonia (Spain), while feigning the symptoms of three different scenarios,
the same cases used in the previous study: an uncomplicated urinary tract infection, an episode of sore throat and a case of acute bronchitis. The mystery shopper was previously trained in how she should perform as well as her answers to possible questions. At each pharmacy studied, one of these three different request scenarios was randomly chosen to be enacted. She was very polite and explained that she was not from the neighbourhood and that she was passing through.

Antibiotics were sold in 54.1% of the pharmacies, with important differences depending on the simulated disease (81.1% for urinary tract infection, 47.9% for sore throat and 32.9% for acute bronchitis; \(P<0.001\)). The results obtained in 2014 are even worse than those observed in 2008. An increase in the sale of antibiotics without prescription was observed for the three simulated cases, but the percentage doubled in the case of acute bronchitis (Table 1). Although the sale of antibiotics without prescription in Spain is still illegal now, as in 2008, if pharmacists did not sell the antibiotic we asked about the reason. The pharmacist claimed purely administrative reasons for not selling the drug in 70.3% of cases, referring to the prohibition of selling an antibiotic without an official prescription. In the other pharmacies, a response related to health or resistance was given (29.7%).

The results of this study demonstrate that antibiotics continue to be sold without a prescription in Spain and are in line with the results of Zapata-Cachafeiro et al. In a short period of time, antibiotics will not be effective because bacteria are becoming resistant even to modern antibiotics, and we are therefore losing the battle against infectious diseases. Eliminating the dispensing of antibiotics without a prescription must constitute one of the most valuable strategies to accomplish this objective. The present study shows that, at least in some regions, buying antibiotics without prescription is still possible in Europe, and in our country is easier than 6 years ago. With the objective of improving the outcomes obtained in this study, there will be educational sessions with pharmacists of the Tarragona Health District, where we will discuss our findings, and we will inform them about the importance of rational utilization of antibiotics today. The European Community countries should have a common health policy, including educative actions and ways to control over-the-counter antibiotic sales. Educative measures and enforcement of the prohibition of selling antibiotics over-the-counter is needed to preserve the effectiveness of these drugs.

**Funding**

We paid for the antibiotics obtained at the pharmacies with our own money, about €600. They have all been delivered to Fundació Humanitària Dr. Trueta, a non-governmental organization in charge of providing medicines to developing countries.

**Transparency declarations**

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**Author contributions**

M. C. G. and C. L. prepared the first draft of the manuscript. M. C. G. carried out the statistical analysis. A. F. and J. C. L. reviewed the first draft and proposed the inclusion of the comparative results between both studies. All the authors have contributed to the final version of the manuscript. C. L. is guarantor.

### References


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Table 1. Antibiotics sold in 2008 and 2014 depending on the clinical scenario