INTRODUCTION
Sulfadiazine (Sdz) is used for the cure of infections. The solubility of SDZ in water is very low, approximately 0.074 mg/ml at 25°C (1), which affects negatively its bioavailability. Cyclodextrins (CDs) interact with poorly-water soluble compounds to increase their apparent solubility. However, the amount of CD that can be used in most pharmaceutical formulations is limited. Therefore, in order to reduce the amount of CDs necessary to obtain the desired drug solubilizing effect, it is important to find effective methods to adequately improve their performance (2).

The aim of the present work was to study the influence of βCD and Leucine (Leu) on the aqueous solubility of SDZ and also, the preparation and characterization of Sdz-βCD-Leu complexes.

MATERIALS AND METHODS
Sdz was obtained from Parafarm, βCD was a gift from Ferromet S.A. and Leu was obtained from Sigma-Aldrich. All experiments were performed with analytical grade chemicals and solvents.

Solubility diagrams were obtained according to Higuchi and Connors (3). Excess amounts of SDZ were added to water solutions containing varying concentrations of βCD and a constant concentration of Leu. Ternary solid systems were prepared with an equimolar ratio of Sdz, βCD and Leu, according to the previous phase solubility studies, using two distinct methods: physical mixtures (PM) and freeze-drying (Free). The IR spectrum and the DSC-TG curves of the SDZ-βCD-Leu freeze-dried product were compared with those of the physical mixture and the pure β-CD, SDZ and Leu.

RESULT AND DISCUSSION
The phase-solubility diagram of the Sdz-βCD-Leu system, showed a linearly increase in the solubility of the drug with increasing βCD concentration at a constant concentration of Leu. This diagram could be classified as AL, according to the model proposed by Higuchi and Connors, and related with the formation of a soluble inclusion complex. The stability constant (Kc) values for the corresponding complexes, were calculated from the slope of the phase-solubility diagram. The Kc for the Sdz-βCD-Leu system was greater than that of Sdz-βCD one, while the solubility values were very similar. The aqueous solubility of Sdz exhibited no change in the presence of Leu only.

The results obtained by IR, DSC and TG showed the presence of a true inclusion complex, Sdz-βCD-Leu, when it was prepared by freeze-dried, and noting a slight interaction when it is formed by PM.

CONCLUSION
An increment in water solubility was obtained for Sdz and the combination of the different analytical methods used (DSC, TG and IR) provided evidence of complexation, which will allow the development of pharmaceutical products using these complexes containing Sdz as active ingredient.

ACKNOWLEDGMENTS
We thank Ferromet S.A (agent of Roquette in Argentina) for its donation of β-cyclodextrin.

REFERENCES

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