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DEPARTMENT OF CHEMISTRY

July 16, 1976

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C.S.I.C.  
Tenerife, Spain

Dear Prof. González:

I have been following your work in the natural products field for quite some time and have been impressed by the variety of interesting compounds you have worked on and the quality of the work. Just as we have done in our own work, you have been very dependent on a variety of spectral methods, and I thought that you might be interested in a computer approach that we have called CONGEN and which we have been utilizing with some success in our own structure studies. This work has been supported by grants from the NIH with the purpose of making this program and general approach more available to the chemical community in this country and abroad. I thought that you might be sufficiently interested to be tempted to use it yourself, and it is for this reason that I am writing to you. Our initial work on CONGEN has been published in *J. Amer. Chem. Soc.* 97, 5755 (1975), and if you have not read it earlier I would suggest that you look at it in order to give you background for what follows in this letter.

I thought that you would be particularly interested if we applied the CONGEN approach to one of your problems in order to illustrate its power, and for that purpose Dr. Jean-Claude Braekman (who works at the University of Brussels but who came here for a few weeks to learn how to handle CONGEN himself) selected a couple of problems outlined by you in two recent papers. The first one deals with your paper on the constituents of Laurencia perforata, published in *Tetrahedron Letters* 2499 (1975). You will note from the attached material that in addition to the structure A proposed by you for perforatone there are seven alternatives that seem to fit your data and are also based on the skeleton III. There are also a dozen other structures based on skeletons I and II that fit, and I am curious whether you considered these.

In the case of perforenone A and B there appear to be only two structures other than the one that you selected, and while the one with the cyclobutene ring seems unlikely, for the sake of rigorousness one should probably try to find some evidence to exclude it unambiguously.

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Dr. Braekman has also applied the CONGEN program to furocaespitane, which you published in Tetrahedron Letters 3625 (1973), and here the program generated five additional structures over and above the one proposed by you which seemed to be consistent with your data.

I would like to encourage you to go over these structures, since there are not very many of them, to determine whether you have any evidence that would exclude them. It is quite possible that you may have additional spectroscopic or chemical data which would introduce additional constraints that would eliminate several, or possibly all but one, of the structures listed.

The chief reason for Dr. Braekman having gone through your recent Tetrahedron Letters papers is that we wanted to demonstrate to you the utility of this method and encourage you to feel free to use our program. It is probably unlikely that you have a computer terminal in Tenerife with which you can communicate with our main computer here at Stanford although there are several such terminals in certain cities in Europe whereby such communication over long distance is easily feasible. However, as we have already done with several other investigators such as Professor Schmitz from Oklahoma, Professor Minale from Naples, and Professor Nakanishi from Columbia, it is sufficient if you send us the relevant spectral and chemical data, similar to what you have published in Tetrahedron Letters, and we would be happy to send you the appropriate computer print-out. We are doing this because we are anxious to demonstrate additional applications of this program and furthermore to refine it as we expose different users to it. The attractiveness of CONGEN is that it is a dynamic program which can be utilized at various stages of a chemist's work so as to reduce the various structural possibilities for a given compound. We have ourselves found that frequently by utilizing it at an early stage structures have been called to our attention which we would have otherwise overlooked and which could easily be eliminated by some relatively simple additional spectroscopic or chemical work.

Please do not hesitate to write if you have any questions and feel free to utilize our computer facilities for your structure work.

Yours sincerely,

Carl Djerassi  
Professor of Chemistry

enclosures

cc: Dr. Jean-Claude Braekman