Comparative Evaluation of Ringdoc and CBAC*

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The availability and relevance of these particular data bases to the pharmaceutical industry are such as to demand some comparative evaluation. At Pfizer the data base coverage of these two services has been examined and selected computerized searches were performed. The results of this study provided some meaningful conclusions as to the general utility of these services.

The need for access to the wide variety of published information pertinent to the pharmaceutical industry has led, in recent years, to the development of several computer-based services. It is to two of such services, *Chemical-Biological Activities* and *Ringdoc,* that the present studies have been addressed in an effort to determine their relative suitability as data bases for the pharmaceutical industry in general, and Pfizer in particular. It is perhaps wise at the outset to state the proclaimed objectives of these particular services. In their paper, the first describing the CBAC service, Terrant and Ish[1] announced: "The express interest of the pharmaceutical industry in having an alerting service for the vast quantities of biochemical information in the primary literature was in a large part responsible for the introduction of CBAC by the Chemical Abstracts Service."

Derwent Publications Ltd., in their *Ringdoc* brochure describes their service thus: "*Ringdoc* pharmaceutical literature alerting and retrieval service is specifically designed to meet the information and documentation requirements of pharmaceutical manufacturers." It is significant then, that both these services have been designed to appeal to the pharmaceutical industry, and it is only appropriate that the industry should endeavor to provide meaningful feedback.

At Pfizer, the *Ringdoc* data base has been in employment as an integral part of the computer-based literature service ARCS for some years.[2] The CBAC data base has been considered as a possible supplement to our computer-based literature service, but prior to any such move it was felt that comparative evaluation of this service should be performed. An earlier paper by Beauchamp[3] has already provided some broad studies in this respect; the present paper sets out to supply a more detailed examination of these two data bases. Three search topics were selected, care being taken not to choose atypical queries and to provide three different approaches to the data bases (Table I). The queries were then coded and applied, on an alerting basis, to the two services. The *Ringdoc* searches were carried out in-house using the Ringcode (Chemical and BioMedical) and WHO disease code for retrieval, whereas the CBAC searches were performed at the 3I Company (Philadelphia) using text/nomenclature and registry numbers for retrieval (Table I). The initial search queries were modified where necessary to ensure their equivalence in the two systems, and the bibliographic output which resulted was collated and analysed. The result of this analysis is given in Table II and illustrated by the bar-graphs in Figures 1 and 2. Several conclusions could be drawn from these figures and discussion of the more significant results follow. Although the bibliographies were produced from computerized services, care was taken, by a manual check, to ensure that material was not being missed as a result of coding problems or search logic.

In all three cases, *Ringdoc* produced more relevant references than did CBAC. It is felt that this is unlikely to be an anomalous result owing to the choice of enquiries, so alternative explanations were sought. The CBAC data base which covers 580 journals, compared with *Ringdoc's* 332, has produced less than half as many abstracts per year as *Ringdoc* (Table III). This indicates that the selection criteria for these two services are substantially different. One significant area of variance is in the abstracting of clinical papers; CBAC specifically excludes reporting the use of drugs in therapy and clinical pharmacology. The extent to which this factor affects the bibliographies is indicated on the bar charts of Figure 1. Since this effect is very marked in the Herpes antivirals and Penicillins searches the analysis was repeated with the exclusion of all clinical papers to produce the bar charts of Figure 2. By this it is not meant to suggest that clinical papers are not of interest to pharmaceutical companies, for surely they are, but merely to provide a more significant comparison of the two services in areas of similar proclaimed coverage. Figure 2 is perhaps most striking in the over-all similarity of the three bar graphs; 40–50% of the references were common to both data bases, there were somewhat more references in non-*Ringdoc* journals in CBAC than vice versa and between 20–30% of the references were "missed" by CBAC but abstracted by *Ringdoc.* By "missed" it is meant that the references were in CBAC journals but were not abstracted. Careful examination of these "missed" papers revealed constraints in the CBAC selection which limit its general utility to a pharmaceutical company. CBAC's apparent inadequacies do not appear to stem so much from unfaithfulness to their stated criteria, but rather they are a function of criteria too rigidly drawn and too narrowly interpreted. A few examples may best illustrate the point being made.

As mentioned above, the Fenclonine search embraces the fields of physiology and neuropharmacology; while the former is a branch of biology, there is a considerable liter-

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Table I. The Searches

Subject	Disciplines	Retrieval	
		CBAC	Ringdoc
1. Fenclonine (*p*-Cl-phenylalanine)	Physiology neuro-pharmacology	Text Nomenclature Reg. Nos.	Chem-Ringcode
2. Herpes virus and antiviral agents	Virology Med-Chem.	Text	Bio-Med. Ringcode WHO Disease Code
3. Penicillins and cephalosporins	Chemotherapy Chemistry	Text Nomenclature Reg. Nos.	Chem-Ringcode

Table II. Analysis of the Search Results

	Fenclonine	Herpes	Penicillins
1. Refs.—total number	80	48	415
2. Refs. common to both	44	15	53
3. Refs. in CBAC only	10	4	27
4. Refs. in Ringdoc only	26	29	335
5. NCJ (in Ringdoc)	1	10	75
6. NRJ (in CBAC)	8	3	25
7. CBAC retrieval	67%	40%	19%
8. Ringdoc retrieval	87%	92%	94%

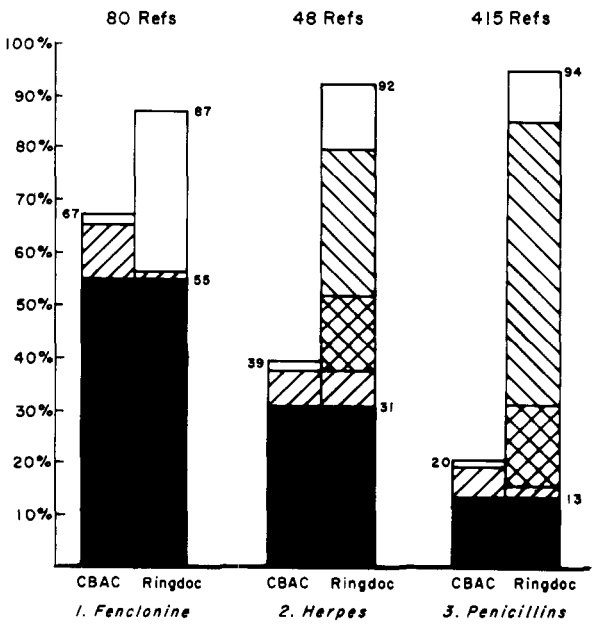

Figure 1. Analysis of search results

■ Refs common to both services
▨ Refs in journals covered by only one service
▩ Clinical refs
□ "Missed" refs (by other service)

ature devoted to biochemical aspects of this subject, especially on the interaction of chemical agents and the CNS. The three references below are examples of relevant papers abstracted by *Ringdoc* but not CBAC:

> Hartman, R. J., and Geller, I., "Effects of *p*-chlorophenylalanine on a conditioned emotional response in laboratory rats," *Pharmacologist*, 1970 (12) 206.
> Kerkut, G. A., *et al.*, "The effect of drug pretreatment on synaptic activity in *Helix* brain," *Brit. J. Pharm.*, 1970 (40) 561P.

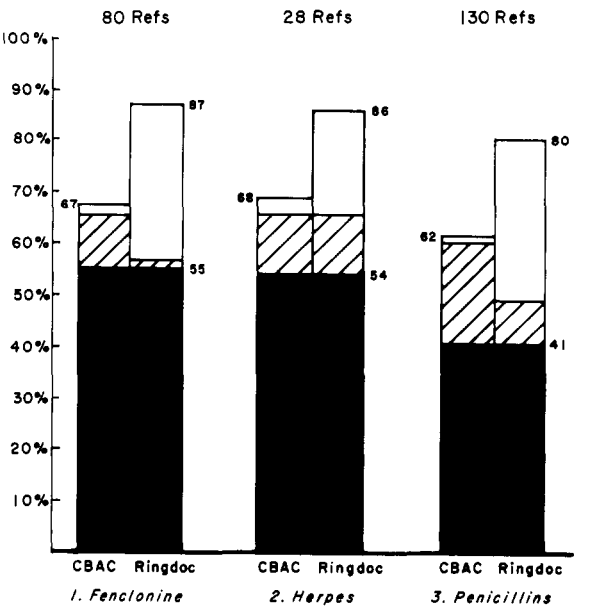

Figure 2. Analysis of search results excluding clinical papers

■ Refs common to both services
▨ Refs in journals covered by only one service
□ "Missed" refs (by other service)

> Pryor, G. T., and Mitoma, C., "Use of *p*-chlorophenylalanine to induce a phenylketonuric-like condition in rats," *Neuropharmacology*, 1970 (9) 269.

And yet the selection criteria as announced by CBAC is:[1] "The effect of exogenous organic compounds on biological systems, including plants, animals, . . . " The example below of a "missed" paper from the Herpes seach, which also illustrates the rather narrow interpretation of the selection criteria, concerns the virucidal activity of chemicals used in dissolving drugs rather than the drugs themselves:

> German, A., *et al.*, "Comparison of the action of propylene glycol and DMSO on various virus-host systems," *Ann. Pharm. Fr.*, 1971 (29) 225.

A "miss" from a similar point of view was also observed with respect to the synthesis of some analogues of biologically active compounds which turned out to be inactive; *Ringdoc* reported this paper whereas CBAC chose otherwise.

In the third search, penicillins and cephalosporins, the CBAC "misses" tended to be purely chemical papers or articles concerned with analytical methods. Thus the synthesis of semi-synthetic penicillins and analogues would

Table III. Number of Abstracts Prepared Annually

	CBAC	Ringdoc
1965	8,393	35,500
1966	14,187	38,500
1967	15,530	40,000
1968	14,423	44,000
1969	15,201	39,000
1970	17,026	43,000
1971	16,787	39,000

not be abstracted by CBAC unless biochemical aspects were also discussed.

It will be observed that Ringdoc too had its "misses"; in the Fenclonine case this amounted to a single reference which described the action of some drugs on the CNS after pretreatment with *p*-chlorophenylalanine. The aspect of "pretreatment" subordinates the significance of the *p*-chlorophenylalanine in the eyes of *Ringdoc* and was thus not coded. The single reference in the Herpes search and the two in the Penicillins search which *Ringdoc* "missed" were veterinary in nature and as such abstracted in the ancillary *Vetdoc* service instead.

The more extensive journal coverage of CBAC over *Ringdoc* is also apparent from the bar graphs in Figure 2 where the range of references from non-*Ringdoc* journals varied between 10–19%. An examination of the journal lists of the two data bases showed that 253 of the journals were common to both services (thus 75% of the *Ringdoc* journals were also covered by CBAC). The remainder of journals covered by each service was also scrutinized for any possible specialist trends but neither CBAC nor *Ringdoc* appeared to exhibit any. From the degree to which *Ringdoc* performed in these searches, it is very clear that their selection of 332 journals has been most successful. While more extensive journal coverage is in theory an asset, the increased rewards, as perhaps in the case of CBAC, are not an adequate substitute for careful article selection.

LITERATURE CITED

(1) Ish, C. J., and Terrant, S. W., Jr., "Chemical-Biological Activities: A specialized information service in Biochemistry," *Amer. J. Pharm. Educ.* **1968** (32) 201–10.
(2) Oatfield, H., "The ARCS System: *Ringdoc* as Used with a Computer," *J. Chem. Doc.* **1967,** (7) 37.
(3) Smith, D. R., Beauchamp, R. O., Jr., Barber, J. L., and Daugherty, M. A., "Computerized Drug Information Services," *J. Chem. Doc.* **1972,** (12) 9.

Comparative Searching of Computer Data Bases*

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Methods for retrieval of information on chemical compounds utilizing several computer data bases have been compared to determine scope of data base coverage. Queries for a single chemical, *N*-ethyl-α-methyl-*m*-trifluoromethylphenethylamine (fenfluramine) and generic chemicals (2-pyrrolidinones) were submitted to the services for searching through the recent literature. Data bases employed included MEDLARS, *Excerpta Medica, CA Condensates,* CBAC, *Ringdoc, Current Abstracts in Chemistry* and *Automatic New Structure Alert* (ANSA). Preparation of search questions is outlined and comparative results are reported indicating the yield from each data base.

In recent years several computer data bases have become available which encompass large areas of technical information. The spectrum of pharmaceutical information contained in these bases covers synthetic organic chemistry, biochemistry, pharmacology, toxicology and veterinary and clinical medicine. Other areas of interest include pharmacy, analytical chemistry, metabolism, radioisotopes, biopharmaceutics, microbiology, and physical chemistry. The user may obtain information from journals, symposia, reviews and patents, but many data are retrieved on a current awareness basis and retrospectively, from intermediary abstract sources. Such central sources are increasingly important in providing information necessary for the preparation of new chemicals and drugs and in keeping the scientist aware of developments in his chosen area.

The principal abstract sources available currently are *Chemical Abstracts, Biological Abstracts, Ringdoc, Vetdoc, Central Patents Index* (including *Farmdoc*), *Excerpta Medica,* and *Index Medicus.* Other services are *Patent Uniterm Index, Science Citation Index* (ASCA), and *Current Abstracts of Chemistry* and *Index Chemicus* (ANSA) and the experimental base, *Integrated Subject File* (ISF, the Chemical and Subject Files). Each of the aforementioned abstract compilations can be searched by means of computer. In the case of *Chemical Abstracts,* two computerized bases can be accessed: *Chemical Abstracts Condensates* (CAC) and *Chemical-Biological Activities* (CBAC). *Index Medicus* is searched via MEDLARS. Smaller sets of these data bases have been compiled for

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