Need for changes in the practical pharmacology curriculum of medical undergraduates

The editorial1 “New wine in new bottles” (IJP, April 2004) certainly hit the nail on the head regarding UG teaching in pharmacology. Since time immemorial, experimental pharmacology and dispensing pharmacy have constituted the cornerstones of practical exercises in pharmacology. Every time an expert committee is appointed by the Medical Council of India (MCI) with the idea of revising the curriculum, many welcome and innovative changes are suggested for most of the disciplines; yet nothing has been done so far to revise and update the syllabus for practical exercises in Pharmacology and to make them more need-based and meaningful. Even in the recent syllabus revision attempted by the Director of Medical Education (2002), Kerala, this problem has not been addressed.

In my opinion the entire scheme of practical pharmacology should be thoroughly overhauled - the actual performance of exercises in experimental pharmacology and pharmacy by the medical students should be deleted for the simple reason that these exercises do in no way address the basic goals/objectives put forward by the MCI in the curriculum, especially since there are many other experiments which are better and more meaningful substitutes.

In Dispensing Pharmacy, the exercises involve the actual (manual) preparation of dosage forms like mixtures, lotions, ointments and creams. Most of these preparations have become outdated and obsolete a long time ago, are hardly prescribed by doctors and are easily available (readymade) in the drug stores – the practicing doctor need not prepare them himself nor does he need to know the intricacies of their manufacture.

Experimental Pharmacology involves testing of drugs on small animals – mice, rats, guinea pigs, rabbits and frogs. Either the whole animal or one of its isolated organs / tissues is utilized for this purpose. There is an urgent need for rethinking on the continued use of these experiments.2 If the proposed objectives of animal experiments are (a) to reinforce the facts learned in lecture classes by actual observation of the same in animals (nothing is better than seeing) (b) to make students aware that testing of drugs in animals is an essential prerequisite for their final trial in human beings or (c) to initiate at least a few students into the field of scientific research – we need to ask ourselves are these objectives really fulfilled?

The main purpose of the undergraduate medical curriculum is to develop the requisite diagnostic and therapeutic skills of a basic doctor. The practical training has also to be need-based and relevant. Unfortunately, the currently employed animal experiments miserably fail to achieve the stated objectives. They may, at the most, help in the development of certain psychomotor skills not required at all for the above-mentioned goals. Nothing much is achieved even though much time is wasted doing these exercises. An overwhelming majority of students also view these experiments with nothing but skepticism – they do not develop or show any interest in performing them and merely do these experiments because they form part of the university examinations.

The difficulties and problems in continuing with animal experiments as a part of practical training are many. One of the main problems is the strictures from the CPCSEA. Some of the rules such as:

a) Experiments shall not be performed for the sole purpose of attaining skills, or by way of an illustration or demonstration.

b) No experiment, the result of which is conclusively known, shall be repeated without justification.

c) Procuring animals: No establishment shall acquire any animal including frog, by sale or otherwise, except from a registered breeder.

are a stumbling block to conduct experiments for teaching. Earlier, we had the liberty to buy animals such as frogs from local persons who were willing to catch frogs from ponds or paddy fields – this is no longer possible. In addition, many of the experiments involve dissection which is time consuming – it takes around 30-40 min before the actual recording of effects. As a result, the student hardly gets time for analysis and interpretation. The allocation of marks in the existing curriculum is a paltry 4 marks in the university exam – this makes animal experiments a mockery of sorts.

If for any reason, animal experiments need to be retained, exercises which do not need special skills, which can be completed in 10-20 minutes and which do not involve dissection or final sacrifice of animals, should be included. Suggested examples are (i) effects of drugs on rabbit’s eye – mydriatics and miotics (ii) local anesthetics: surface anesthesia on rabbit’s eye (iii) local anesthetics: infiltration anesthesia on guinea pig (iv) skeletal muscle relaxants: on intact rats / mice (v) graph construction and calculation of kinetic parameters: plasma half-life, volume of distribution, therapeutic index, drug antagonism.

It is unfortunate that the expert committees appointed by the Indian Pharmacological Society at the various annual conferences to look into issues related to the CPCSEA and the UG curriculum are still silent on these issues even though many years have lapsed since they were formed. Unless we, as teachers, take more initiative, students may seek other avenues to redress their concerns.

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References