Screens in Safety and Hazard Assessment

1 INTRODUCTION

In biological research, screens are tests designed and performed to identify agents or organisms having a certain set of characteristics that will either exclude them from further consideration or cause them to be selected for closer attention. In pharmaceutical safety assessment, our use of screens is usually negative (i.e., no activity is found)—agents or objects possessing certain biochemical activities are considered to present enough of a hazard that they are not studied further or developed as potential therapeutic agents without compelling reasons (in cases of extreme benefit such as life-saving qualities).

In the broadest terms what is done in preclinical (and, indeed, in phase I clinical) studies can be considered a form of screening (Zbinden et al., 1984). What varies is the degree of effectiveness of (or our confidence in) each of the tests used. As a general rule, though we think of the expensive and labor-intensive "pivotal" studies required to support regulatory requirements (e.g., 4-week-to-1-year toxicity, carcinogenicity, and segment I–III studies) as definitive, in fact, they are highly effective (or at least we generally so believe) but not necessarily efficient screens.

Though toxicologists in the pharmaceutical industry are familiar with the broad concepts of screening, they generally do not recognize the applicability of screens. The principles underlying screening are also not generally well

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