

CHAPTER 14

CATALYTIC DILUTIONS

The philosophy of the dominant therapy has been, up to now, to saturate the patient with as much destructive agent as possible, so as to destroy the enemy invader without too much injury to the patient. Quinine and Atabrine in Malaria, and the present-day antibiotics, are examples. So safe concentration is the logical procedure under this system. This is pharmacology. On the other hand, the physiological approach has different aims. It is corrective, restorative and induces the changes it wants. Then, the question becomes what are the physiological ranges of concentration in which the Remedy shows best action by actual measurements and careful observation. The question not only is how dilute must the solution of the Reagent be, but also, how concentrated dare it be and still retain physiological activity. A look at the physiological natural reagents that carry activated Carbonyl groups will show how high nature dilutes them for best action. As a starter, no better guide could be chosen. Here again, we see that our Postulate, of nearly half a century of application, is just recently receiving support from the physiological processes of Nature herself.

A dilution of one part of a Reagent to a trillion of water carries thousands of billions of molecules in each cubic centimeter. Since only one molecule is required to start a catalytic action that can grow with geometric progression, nature is not stingy when she supplies vitamin B₁₂ in quantities so small that they can act normally in concentrations of 1×10^{-9} or one part to a billion. Only three micrograms is an effective therapeutic dose. Only 0.01 millimicrograms gives definite growth response to bacteria. (U.S. Pharmacopeia Vitamin B₁₂ Study Panel). Echinochrome A, is a naphthaquinone without one double bond carrying a free hydrogen atom. Its O/R potential is only 0.080 v. This is because the molecule has five hydroxyl substituents where hydrogen instead would have raised the potential 0.3 v. higher. Still, it is active in inducing motion in Sea Urchin eggs in dilutions of $1:2 \times 10^{-9}$ (Fieser, 1944 Edition, page 753). Crocin belongs to the carotenoid family and presents two terminal Carbonyl groups conjugated with ethylene linkages, a chain of seven, with four methyl substituents. The Carbonyl groups are part of the terminal Carboxyl groups that have each been esterified with gentiobiose. It is active in the highest dilutions as demonstrated by Kuhn and Kuhn and Moewus — (1938-1940). Only one molecule is required to determine sex activity in the *C. augamentos* F. simplex and *Chlamydomonas* genus of algae. Thus the dilutions may be higher than one part to a trillion of water, and Prof. Gilbert Smith, in 1947, reported the production of motility in certain plant sex cells by use of only one part of this reagent to 250,000,000,000 parts of water. Heparin is active in suspending blood coagulation in amounts so minute that there is no method to detect its presence (Fieser — p. 487 — 1944 Edition), and acetyl choline

(Karrer — p. 239 — 1947 Edition), is able to renew suspended contractions in the intestinal muscle of the surviving guinea pigs in a dilution of one part to 1,000,000,000 parts of water. Since biological reactions are so much more refined than laboratory manipulations, one cannot judge physiological activity by chemical detection or measurements. Likewise, clinical results are not to be predicted by the swing of a chemical balance. One thing must be observed, however, and that is when high dilutions are used, freedom from interfering reagents or measures are imperative, the work must be more careful and scientific, than when crude work is being done on a mass-action scale.

The chemistry of the free radical and mesomeric electron displacements will give biochemistry a different hue from the conceptions of the pharmacology laboratory that have controlled up to this time. The dosage and dilution are matters of expert decision, based on experience and enlightenment, not upon prejudice or superstition.

Following the 1955 and 1958 editions of this book, some eminent biochemists such as Szent Gyorgyi, have expressed opinions supportive to our basic philosophy with regard to the position of the free radical (lone electron) in carcinogenesis and other biochemical fields. This is indeed a gratifying advance over the dominant approach, and its correctness has already been established for decades as our text demonstrates.

See Appendix III, for further confirmation of the double bond and free radical phenomena concerned in pathogenesis and its correction.