

Citation Classics

Anton, Aaron H & Sayre, David F. A study of the factors affecting the aluminum oxide-trihydroxyindole procedure for the analysis of catecholamines. *Journal of Pharmacology and Experimental Therapeutics* 138:360-75, 1962.

This paper presents a reliable, quantitative, highly sensitive, adaptable method for the estimation of catechol-amines in diverse biological material from various vertebrate species. This method involves the selective adsorption of the catecholamines onto a constant amount of aluminum oxide, elution with constant volume of perchloric acid (0.05 N), and their measurement by the formation of a fluorescent trihydroxyindole derivative in the presence of potassium ferricyanide and alkaline (10 N alkali) ascorbate. [The SC[®] indicates that this paper was cited 1,087 times in the period 1961-1975.]

Aaron H. Anton, Ph.D.
Department of Anesthesiology
School of Medicine
Case Western Reserve University
Cleveland, Ohio 44106

January 20, 1977

"Peer recognition of one's efforts is certainly a gratifying and pleasant experience, especially when it is unexpected. I was not aware that our method for the analysis of catecholamines was being used to the extent indicated in this citation. On the one hand, its wide use reflects the protean nature of the catecholamines which have been implicated in the physiology of diverse biological systems

ranging from plants to man. On the other hand, each variable in the procedure, and there are many, was thoroughly examined and sufficient details are given in the publication so that it can be readily followed. Another reason for its frequent citation could be that it contains a useful table listing the distribution of norepinephrine and epinephrine in man and various laboratory animals.

"I became interested in the catecholamines in 1960 in relation to their controversial role in essential hypertension. It soon became apparent that the controversy was partly due to methodological problems. Dave Sayre, a superb technician, joined me about that time and we carried out a detailed analysis of the factors involved in various published procedures. This was a long, tedious, and at times, frustrating experience since we wanted a versatile method that could be used with a variety of biological material including urine, plasma, tissue and cerebrospinal fluid. The present method evolved from that study and we still use it essentially as described in the original publication.

"Catecholamine methodology is recognized as being difficult because: (1) the parent compounds are unstable if not properly preserved, (2) many technical factors, e.g., reagents, timing, temperature, can influence the results, and (3) their relatively low concentration *in vivo* requires, careful attention to details in order to obtain reproducible results. We are very pleased with this citation since it indicates that our work was worthwhile, resulting in a method for the analysis of these important metabolites that apparently has been used successfully by many investigators."