

thesis (Brock), Kögl connected this phenomenon with the autocatalytical production in vivo of an altered protease (cathepsin), which is generated in the tumor tissue endogenously in a fashion comparable to the exogenous development of tumor viruses. In further elaborating on the possible biological meaning of the alleged stereochemical protein abnormalities of tumor tissue, Kögl stated that the length of the latency period depended upon the rate at which d-aminoacids are incorporated into the cellular proteins. When the cellular contents of d-aminoacids surpasses a critical level, a fundamental change in the cellular character occurs, according to Kögl. The existing morphological differences between cancers of various types were attributed by Kögl to variations in the number and character of the d-aminoacids composing the protein matter of different neoplasms. Carcinomas were said to be distinguished from sarcomas by a higher content of d-aminoacids, providing a chemical substantiation of the different structural nature and biological behavior of these two types of malignant growths.

The chemical observations on tumor tissue made by Kögl were confirmed by Arnow and Opsahl; and White and White, but could not be substantiated by Chibnall, Rees, Tristram, Williams, and Boyland; Graff, Chargaff and Lipmann; Behrens, Kabat and Burk. The latter group of investigators pointed out that the uniformity and low order of d-aminoacids observed in a variety of hydrolysates examined, whether from benign or malignant tumors, normal tissues, or proteins, showed that malignancy is, as a rule, not specifically characterized by the presence of aminoacids of unnatural (d-) configuration. Klinke maintained, from his investigations on the d-aminoacid content of the rabbit myxoma, a virus propagated tumor, that d-aminoacids are not cancer specific in etiologic respects, but reflect merely local or general cellular or tissue disturbances.

While the contradictory character of the in vitro studies on the d-aminoacid content of cancers does not permit at the present time a definite decision concerning the validity of Kögl's claims from a chemical viewpoint, the speculative interpretations as to the biological significance of such stereochemical abnormalities, if actually existing, are unwarranted to a large extent by the evidence presented and are contrary to certain well-established facts. In connection with the theories of Waldschmidt-Leitz and Voegtlin it was mentioned that infiltrative and destructive growth is not a quality specific for and limited to malignant cells, as it is commonly observed with chronic, inflammatory, epithelial hyperplasias, endometrioses, and glioses, and can be reproduced in tissue cultures containing two types of tissue by varying the growth rate through changes produced in the environmental nutritive medium. Apart from this objection it must be doubted seriously that proteolytic enzymes are unable to hydrolyze tumor protein, as it is an every day experience to see cancerous necroses gradually absorbed by the invasion of the various phagocytic elements