

Serous cutaneous glands substructural organization in anurans as a model of peptide/protein aggregation

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A combined Transmission Electron Microscope (TEM) and Fourier Transformation (FT) analysis has been performed on the secretory granules storing active peptides/proteins in cutaneous glands of n. 12 anuran species. Previous TEM investigation showed that the granules are provided with remarkable repeating substructures based on discrete subunits, arranged into a consistent framework. Furthermore, TEM analysis revealed that this recurrent arrangement is acquired during a prolonged post-Golgian (or maturational) processing that affects the secretory product. Maturation leads to a variety of patterns that depends on the degree of subunit clustering. Since the ultrastructural features of these biological samples were found to be suitable for FT analysis, this variety of recurrent patterns has been plotted into a range of FT frequency spectra. Through this quantitative approach we found that the variable granule substructure can be reduced to a main mechanism of peptides/proteins aggregation.

Keywords: Transmission electron microscopy, fourier transformation, secretory granules.