



## ORIGINAL ARTICLE

# Ultrastructural study of the mucocytes in the dermal glands of *Bufo peszewi* (Amphibia, Bufonidae), with some reflections on the polymorphism of the secretory epithelium

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## Abstract

Light microscopy (LM) of the dermal mucous glands (MGs) of the green toads, *Bufo peszewi*, has revealed five basophilic and oxyphilic staining variations in the secretory cells that were combined in three groups (here, TYPEs) under transmission electron microscope (TEM). TYPE I MCs are characterized by a well-developed Golgi complex (GC), numerous large granules from a finely grained to flaky central content varying from low to increased electron density and rare electron-dense osmiophilic granules. TYPE II MCs have a well-developed granular endoplasmic reticulum (GER), GC and secretory homogeneous granules of high electron density with clear membranes. Some MCs demonstrate a sharp expansion of GER with complete membrane reduction and the formation of a homogeneous secret of “varnished” appearance and were presumably assigned to TYPE III MCs of a seromucous nature. Three types of mucocytes are suggested as different directions of cytodifferentiation of the stem cells. The data on MC polymorphism is discussed in the light of the pluripotent nature and high evolutionary plasticity of the skin's secretory epithelium. The development of MCs with seromucous secretion is proposed as a sort of MGs “proteinization,” in some way connected with the adaptation of tetraploid toads to the severe environment of Central Asia.

## KEYWORDS

*Bufo viridis* complex, land adaptation, mucous glands, skin, transmission electron microscopy

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