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Comparative Study of Primo Vascular System in Dental Tissues

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Objectives The existence of a lymph-associated primo vascular system (L-PVS) was first claimed by Kim in the early 1960s and was only recently confirmed by various experimental groups. Long threadlike structures floating in large-caliber lymph ducts were first observed with the dye Janus green B in the lymph ducts stemming from the lumbar nodes in the abdominal cavity of a rabbit. The current work is connected indirectly towards to obtain sufficient specimens of the L-PVS from the oral mucosa. The study will overcome the limitations that in the literature only compared the efficacies of the dyes in visualizing the L-PVS and did not uncover the biochemical mechanism for their different behaviors.

Methods For the detection of PVS, immuno-histochemical investigations will be performed on tissue samples from the gingiva of patients who had been removed due to inflammation. Histopathological examination of each specimen will first be performed by HE staining and PAS reaction. Then, 6 unstained consecutive sections will be mounted for immuno-histochemistry. The first section will be labeled with the antibody CD31. The following sections will be labeled with OKT3/4 (ORIGENE, clone =T19B7) CD133, and D2-40 using the fully automated Ventana Bench mark Ultra system. Evaluation of the immunohistochemical reaction will be performed on an Olympus BX40 microscope.

Results This presentation reports results for two dyes, HE staining and PAS reaction. Further, lymphatic vessels will be selectively labeled with antibody D2-40 (4th section). This labeling will provide an orientation on the specimen so that if stem cells or PVS cells can be labeled with Oct3/4 and CD133, they can be topographically assigned to the existing vascular or lymphatic system. Through the sections, we can only say using our initial results that a PVS up to now does not come to visualize and individual stem cells can be detected in the wall and surroundings of lymphatic vessels.

Conclusions The primo vascular system (PVS) is a very important topic of study nowadays because of their role in transport and regeneration of dental tissue and in cell migration. The PVS was detected in different organs of different animal species but not in the dental tissues. In this work, we will observe the PVS inside the dental tissues for the first time.