

## Absorption of lymphatics beneath the buccal mucosa and the palatal mucosa

### -Drug administration via the oral mucosa-

Akira Fujimura<sup>1</sup>, Yohichiro Nozaka<sup>1</sup> and Koichiro Sera<sup>2</sup>

<sup>1</sup>First Department of Oral Anatomy, School of Dentistry, Iwate Medical University  
1-3-27 Chuo-dori, Morioka, Iwate 020-8505, Japan

<sup>2</sup>Cyclotron Research Center, Iwate Medical University  
348-58 Tomegamori, Takizawa, Iwate 020-0173, Japan

#### Abstract

We have reported that the lymphatic architecture beneath the buccal mucosa and palatal mucosa which had the high absorption shape by morphological analysis. These lymphatic vessels absorbed the antitumor agent, and it was accumulated in the regional lymph nodes ( submandibular lymph nodes), when it was injected around the tumor. The quantity of this agent became very little against the whole body and we thought that this quantity did not raise the side effects of antitumor agent in this method. We present whether it could reach to the regional and /or the metastatic lymph node or not when it is administered via the oral mucosa. Cisplatin which has the platinum in chemical structure is used in this study. The platinum was detected using the element analyze with Particle Induced X-ray Emission (PIXE) in Cyclotron Research Center (Iwate Medical University).

Ten  $\mu$ l of Cisplatin (0.1 mg/ml) drown in stype and sets on the left buccal mucosa and the center of the palatal mucosa of the mouse which were already reported the lymphatic architecture. After 5 minutes massage and 5 minutes neglect, the right and left submandibular lymph nodes were extracted and dried at 100 degree centigrade for two days. The platinum was analyzed by PIXE.

The accumulation of the platinum in the submandibular lymph nodes from the buccal mucosa: 4.5  $\mu$ g/g in the left submandibular lymph node; 4.2  $\mu$ g/g in the right submandibular lymph node. The accumulation of the platinum in the submandibular lymph nodes from the palatal mucosa: 9.9  $\mu$ g/g in the left submandibular lymph node; 6.5  $\mu$ g/g in the right submandibular lymph node.

The oral mucosa is formed by the stratified squamous epithelium. The buccal mucosa classified in the lining mucosa and the palatal mucosa classified in the masticatory mucosa. The former has thin and the latter has thick cornified layer.

This result showed that Cisplatin was absorbed more at the buccal than at the palatal mucosa. We have thought that the palatum is very useful part for administration because the deep cervical lymph node, which is the final lymph node of head and neck region is the regional lymph node of the palatum in human. And the palatum can use for application to the drug administration using denture. We think that the buccal and the palatal mucosa are very useful for drug administration via the mucosa.