**Expression of Transferrin Receptor in Canine Malignant Oral Tumors**

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**Introduction**

Transferrin receptor I (TfRI) is a cell-surface glycoprotein that binds and uptakes iron from transferrin. The transferrin receptors expressed on all cells, such as immature erythroid cells, placenta epithelial cells and proliferative cells, but their levels depended on cell iron requirement (2, 3). Human transferrin receptor expression in oral tissues was reported in all malignant tumors but not in benign tumors. An expression supposed to be diagnostic biological tumor marker of malignant tumors in human being (1, 4). Therefore, there are no reports involving transferrin receptor in canine oral tissues and oral masses. Thus, the aim of this study was to evaluate an expression of transferrin receptors in canine malignant oral tumors.

**Materials and Methods**

Samples collection: A total of 26 oral mass samples were collected from dogs that presented to the Small Animal Teaching Hospital, Faculty of Veterinary Science, Chulalongkorn University during 2013-2014. All samples were collected by incisional biopsy from tumor mass and adjacent gingiva (size about 1x1 cm.). All samples were formalin-fixed and routinely histologic processed for diagnosis. Histopathological diagnosis was done based on WHO tumor classification.

Transferrin receptor expression: Immunohistochemistry was performed by LSAB method by using monoclonal mouse anti-human TfRI antibody (clone 68.4, Zymed Laboratories, San Francisco, CA), at a dilution of 1 : 500. Envision Polymer system (Dako, Carpentaria, CA) was applied and color developed by using 3, 3′ diaminobenzidine as a chromogen substrate and counterstained with Mayer’s hematoxylin. Canine placenta was used as positive control.

**Results and Discussion**

Transferrin receptor expression by immunohistochemistry was detected in canine placental epithelial cells, normal gingival and hyperplastic gingival epithelial cells and tumor cells as intense cytoplasmic and membranous staining. (Fig. 1) Oral tumors were histopathologically categorized into 12/25 (48%) malignant melanoma, 3/25 (12%) squamous cell carcinoma and 10/25 (40%) acanthomatous epulis with chronic hyperplastic gingivitis. All tumors expressed transferrin receptor significant different positive areas between chronic hyperplastic gingivitis and oral malignant tumors, as shown in Table 1.

![Figure 1](image-url) 10X, Canine placental tissue were observed transferrin receptor of trophoblastic cells (1a, 1b). Chronic hyperplastic gingivitis expressed transferrin receptor of proliferative mucosal epithelial cells (1c, 1d). Oral melanoma were noted transferrin receptor of malignancy cells (1e, 1f). Oral squamous cell carcinoma were seen transferrin receptor of cancer cells (1g, 1h).
Table 1 Transferrin receptor expression in oral tissue and tumors

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<thead>
<tr>
<th>Transferrin receptor expression</th>
<th>Percentage of positive area (%) Average ± SD</th>
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<tr>
<td>Chronic hyperplastic gingivitis/Epulis (n = 10)</td>
<td>0.65 ± 1.10</td>
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<tr>
<td>Malignant Melanoma (n = 12)</td>
<td>57.27 ± 16.08</td>
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<td>Squamous cell carcinoma (n = 3)</td>
<td>76.14 ± 9.82</td>
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These results were consistent with previous reports in human. Thus, transferrin receptor might be a candidate of tumor marker and prognostic marker in canine oral tumors.

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References