

## LIST OF FIGURES

No	Title	Page
<b>Introduction</b>		
<b>2.1</b>	Incidence of Tobacco Related Cancers at GCRI, Year 2001.	<b>9</b>
<b>2.2</b>	Plasma membrane and its components (Glycoproteins and Glycolipids)	<b>12</b>
<b>2.3</b>	Oligosaccharide branching of glycoproteins	<b>13</b>
<b>2.4</b>	Schematic representation of the SLe <sup>x</sup> mediated complex, multi-step process of hematogenous metastasis of cancer	<b>27</b>
<b>2.5</b>	Schematic illustration of E-cadherin in adherens junction. E-cadherin homodimer on the cytoplasmic membranes of adjacent cells	<b>29</b>
<b>2.6</b>	E-cadherin ectodomain shedding resulting in the formation of an invasion-promoting sE-cadherin fragment	<b>30</b>
<b>Results</b>		
<b>4.1</b>	Standard curve for Sialic Acid (N-Acetyl Neuraminic Acid)	<b>62</b>
<b>4.2A</b>	Comparison of serum TSA between the Controls and Patients	<b>63</b>
<b>4.2B</b>	Comparison of serum TSA/TP between the Controls and Patients	<b>63</b>
<b>4.3A</b>	Representative blot of $\alpha$ 2,6-sialoproteins	<b>64</b>
<b>4.3B</b>	Comparison of mean density of $\alpha$ 2,6-sialoproteins	<b>64</b>
<b>4.3C</b>	Representative blot of $\alpha$ 2,3-sialoproteins	<b>65</b>
<b>4.3D</b>	Comparison of mean density of $\alpha$ 2,3-sialoproteins	<b>65</b>
<b>4.4</b>	Standard curve of <i>p</i> -Nitrophenol for 96-well plate ELISA based $\alpha$ 2,6-SiT and $\alpha$ 2,3-SiT assay	<b>65</b>
<b>4.5A</b>	Comparison of serum $\alpha$ 2,6-SiT activities between the controls and patients	<b>67</b>
<b>4.5B</b>	Comparison of serum $\alpha$ 2,3-SiT activities between the controls and patients	<b>67</b>
<b>4.6</b>	Standard curve of 4-methyl-umbelliferone (4-MU) for sialidase estimation by spectrofluorimetric method	<b>68</b>
<b>4.7</b>	Comparison of serum sialidase activity between controls and patients	<b>68</b>
<b>4.8</b>	Serum $\alpha$ 2,6-SiT activities in different stages of oral cancer	<b>72</b>
<b>4.9</b>	Serum TSA, TSA/TP and $\alpha$ 2,6-Sialoproteins levels: association with tumour differentiation	<b>73</b>
<b>4.10</b>	Comparison of serum TSA, TSA/TP, $\alpha$ 2,6-SiT, $\alpha$ 2,3-SiT	<b>74</b>

	and sialidase between PT and CR	
<b>4.11</b>	Comparison of serum TSA, TSA/TP, $\alpha$ 2,6-SiT, $\alpha$ 2,3-SiT and sialidase between PT and NR	<b>75</b>
<b>4.12 (A- H)</b>	Serum TSA, $\alpha$ 2,6-SiT, $\alpha$ 2,3-SiT and Sialidase in representative cases of a CR (A-D) and a NR (E-H) at each follow-ups during anticancer treatment	<b>76</b>
<b>4.13</b>	Total sialic acid in malignant and adjacent normal tissue	<b>79</b>
<b>4.14 (A, B)</b>	Representation of SNA-blot for $\alpha$ 2,6-sialoproteins in oral cancer and OPC tissues	<b>80</b>
<b>14C</b>	Comparison of density of $\alpha$ 2,6-sialoproteins between malignant and adj. normal tissues	<b>80</b>
<b>4.15 (A, B)</b>	Representation of MAL-blot for $\alpha$ 2,3-sialoproteins in oral cancer and OPC tissues	<b>81</b>
<b>4.15C</b>	Comparison of density of $\alpha$ 2,3-sialoproteins between malignant and adj. normal tissues (15C)	<b>81</b>
<b>4.16A</b>	Comparison of $\alpha$ 2,6-SiT activities between malignant and adjacent normal tissues	<b>82</b>
<b>4.16B</b>	Comparison of $\alpha$ 2,3-SiT activities between malignant and adjacent normal tissues	<b>82</b>
<b>4.17</b>	Sialidase activity in malignant and adjacent normal tissues	<b>82</b>
<b>4.18 (A-C)</b>	Mean $\alpha$ 2,6 SiT, $\alpha$ 2,3 SiT and sialidase activities in malignant tissues in different stages of the disease	<b>84</b>
<b>4.19</b>	Mean tissue $\alpha$ 2,3-SiT, $\alpha$ 2,3-sialoproteins and $\alpha$ 2,6-sialoproteins in different pathological tumour differentiation	<b>85</b>
<b>4.20</b>	Standard curve for Fucose	<b>86</b>
<b>4.21A</b>	Comparison of serum Fucose in the subjects	<b>86</b>
<b>4.21B</b>	Comparison of serum Fucose/TP in the subjects	<b>86</b>
<b>4.22</b>	Representative Pattern-1 for fucoproteins	<b>88</b>
<b>4.23A</b>	Serum fucoproteins levels in a CR before and after anticancer treatment (case#41)	<b>89</b>
<b>4.23B</b>	Serum fucoproteins levels in a PR before and after anticancer treatment (Case#18)	<b>90</b>
<b>4.24</b>	Representative Pattern-2 for fucoproteins	<b>90</b>
<b>4.25</b>	Serum fucoproteins levels in a NR before and after anticancer treatment (Case#40)	<b>91</b>
<b>4.26</b>	Standard curve of <i>p</i> -Nitrophenol (PNP) for $\alpha$ -L-fucosidase	<b>93</b>
<b>4.27</b>	Comparison of serum $\alpha$ -L-fucosidase activity between controls and patients	<b>93</b>
<b>4.28</b>	Comparison of mean serum levels of fucose and fucose/TP with tumour differentiation	<b>95</b>

<b>4.29 (A-D)</b>	Representative patterns of serum fucose and fucosidase levels before and after anticancer treatments in a CR (A & B) and a NR (C & D)	<b>97</b>
<b>4.30 (A,B)</b>	Comparison of $\alpha$ -L-fucosidase between malignant/OPC and adjacent normal tissues in the patients	<b>98</b>
<b>4.31</b>	Serum protein electrophoretic pattern stained with CBB	<b>99</b>
<b>4.32</b>	Representative serum glycoprotein electrophoretic pattern stained with PAS	<b>100</b>
<b>4.33</b>	Representative 2D map of serum proteins	<b>101</b>
<b>4.34</b>	Electrophoretic pattern of unusual protein elute	<b>102</b>
<b>4.35</b>	Graph representing Rf values vs. Log values of standard protein molecular weight markers	<b>103</b>
<b>4.36A</b>	Representative blot of SLe <sup>X</sup> in OPC	<b>105</b>
<b>4.36B</b>	Representative blot of SLe <sup>X</sup> in Oral cancer patients	<b>105</b>
<b>4.37 (A, B)</b>	Paired 't'-test analysis for SLe <sup>X</sup> in tissues	<b>106</b>
<b>4.38A</b>	Representative blot of E-cadherin in OPC	<b>106</b>
<b>4.38B</b>	Representative blot of E-cadherin in oral cancer patients	<b>106</b>
<b>4.39 (A, B)</b>	Paired t-test for E-cad <sup>97</sup> :E-cad <sup>120</sup> in tissues	<b>108</b>
<b>4.40 (A, B)</b>	Receiver's Operating Characteristic (ROC) curve	<b>108</b>
<b>4.41</b>	Comparison of SLe <sup>X</sup> , E-cad <sup>120</sup> , E-cad <sup>97</sup> and E-cad <sup>97</sup> :E-cad <sup>120</sup> in oral malignant tissues in patients with nuclear grade I, II and III	<b>110</b>
<b>4.42</b>	Comparison of SLe <sup>X</sup> , E-cad <sup>120</sup> , E-cad <sup>97</sup> and E-cad <sup>97</sup> :E-cad <sup>120</sup> in oral malignant tissues between well, moderate and poorly differentiated tumour	<b>110</b>
<b>4.43</b>	Comparison of SLe <sup>X</sup> , E-cad <sup>120</sup> , E-cad <sup>97</sup> and E-cad <sup>97</sup> : E-cad <sup>120</sup> expression in oral malignant tissues in patients with and without lymphnode metastasis	<b>111</b>
<b>4.44</b>	Comparison of SLe <sup>X</sup> , E-cad <sup>120</sup> , E-cad <sup>97</sup> and E-cad <sup>97</sup> :E-cad <sup>120</sup> in oral malignant tissues in patients with early and advanced stage of the disease	<b>112</b>