Function Association of Tissue Inhibitor of Metalloproteinase-1 and Malignant Melanoma: Systomics Approach

Malignant melanoma is an important skin cancer that has a deadly prognosis. Recently, Yoshino *et al.* have reported on the clinical relevance of the tissue inhibitor metalloproteinase-1 (TIMP-1) in patients with malignant melanoma (1). They noted that increased serum levels of TIMP-1 reflected the extent of metastatic melanoma lesions (1). Here, the author proves this reported association using the systomics approach by basic gene ontology technique. The author determines molecular function and biological process of TIMP-1 and further traces it for probable action in the pathogenesis of malignant melanoma.

The standard GOFigure tool was applied for the gene ontology in this mini-study as in previously published paper (2). According to this work, there are three molecular functions (protein binding, enzyme inhibitor activity and metalloendopeptidase inhibitor activity) and three specific biological processes (negative regulation of membrane protein ectodomain proteolysis, erythrocyte maturation and posi8tive regulation of cell proliferation). Further tracing showed that the only two processes that matched the possible underlying biological processes included: (a) erythrocyte maturation (3), and (b) positive regulation of cell proliferation (4), leading to progression of melanoma in the medical literature database. Focusing on biological processes that lead to progression of melanoma**,** the fact that p53 and mdm2 are found to be increased confirms positive regulation of cell proliferation as the main pathological biological process (4).

References

1. Yoshino Y, Kageshita T, Nakajima M, Funakubo M, Ihn H. Clinical relevance of serum levels of matrix metallopeptidase-2, and tissue inhibitor of metalloproteinase-1 and -2 in patients with malignant melanoma. J Dermatol 2008;35:206-14.
2. Wiwanitkit V. Effect of interleukin-2 and tumor necrosis factor-alpha on osteopontin: molecular function and biological process. Pediatr Int 2008;50:213-5.
3. Nyholm RE, Currie GA. Monocytes and macrophages in malignant melanoma. II. Lysis of antibody-coated human erythrocytes as an assay of monocyte function. Br J Cancer 1978;37:337-44.
4. Gelsleichter L, Gown AM, Zarbo RJ, Wang E, Coltrera MD. p53 and mdm-2 expression in malignant melanoma: an immunocytochemical study of expression of p53, mdm-2, and markers of cell proliferation in primary versus metastatic tumors. Mod Pathol 1995;8:530-5.

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