COLON CANCER DIAGNOSIS: A PROTEOMIC APPROACH TO SEARCH POTENTIAL BIOMARKERS

F. Ciregia [(1)], P. Iacconi [(1)], Y. Da Valle [(1)], L. Giusti [(1)], E. Donadio [(1)], T. Ventroni [(1)], G. Giannaccin [(1)]i, M. Chiarug [(1)]i, F. Basolo [(1)], L. Torregrossa [(1)], A. Lucacchini [(1)].

[(1)] University of Pisa

Colon cancer is a preventable, treatable cancer when detected at the premalignant or early stages. Even if screening is necessary to detect precancerous and early stage colorectal cancer it is still not uniformly accepted by the eligible public.

The purpose of this study is to apply a proteomic approach to search potential proteins biomarkers useful for early detection of colorectal carcinomas. Our idea is to search proteins differentially expressed in the washing fluid of colorectal tract after surgical resection, to obtain a mixture of proteins deriving from secretion of tumoral epithelial cells and then potentially involved in the pathological progression of tissue.

Samples of washing fluids were obtained at surgery from 32 patients submitted to colon resection for adenocarcinoma while the respective controls were obtained from washing of healthy section. Samples were immediately centrifuged, concentrated and resulting protein pellets were obtained after trichloroacetic acid precipitation. The samples were separated in four different groups: adenocarcinoma (AC), mucinous adenocarcinoma (MAC), adenocarcinoma with metastasis (ACM) and ascending colon adenocarcinoma (ACA). After 2D separation the protein patterns were compared with respective normal samples. Among the classes a total of 83 proteins spots were found to be differentially expressed, each exhibiting ≥ 2 fold-change (either increase or decrease) of mean value spot intensity in the cancer with respect to normal samples. After mass spectrometry we identified these proteins and beside of alfa-1 antitrypsin and heat shock proteins that we found overexpressed in all groups, peculiar proteins resulted differentially expressed in ACM and ACA (i.e selenium binding protein, plastin-2, serpin B5, serpin B9, proliferating cell nuclear antigen, translationally controlled tumour protein, elastase 3B) whereas no particular differences were observed for MAC group. Our results suggest that washing fluids could be a starting point to study the presence of potential markers implicated in tumour onset and progression.