Title: Study of miRNA presence in the plasma fractions of gastric cancer patients

Authors: Mohammad R. Arastoo1, Saeed Emadi1 and Omid R. Faridani2

Abstract: Introduction: Current diagnostic tools lack adequate efficiency and sensitivity to detect the disease of gastric cancer in the early stages. So development of a novel diagnostic test which is able to detect cancer in early stages will be crucial and inevitable. In this study, we aimed to develop a strategy to fractionate plasma of gastric cancer patients and investigate the levels of selected miRNAs in those fractions compare to the normal samples.

Method: In this controlled study, we investigated the panel of seven miRNAs in different fractions of plasma from three gastric cancer patients and healthy donors using quantitative RT-PCR. To set up the experiment, we recruited several techniques i.e. cell culture, RNA extraction, in vitro transcription, primer designing, and particle size measurements.

Results: We could detect all miRNAs of our panel (let-7a, miR-20a, miR-21, miR-27a, miR-106a and miR-106b) in all plasma fractions from patient and normal samples. Expression analysis showed that levels of some miRNAs (miR-21, miR-27a, miR-106a and miR-106b) tend to be different in cancer and normal samples and each plasma fraction can have independent correlation with the cancer condition.

Conclusions: The ultimate goal of this research is to find a robust and reproducible miRNA changes in cancer compare to normal plasma and use it as a biomarker for early diagnosis of gastric cancer patients. Our result provides a new opening in the search for miRNA biomarkers in plasma. In the future, larger number of samples should be employed and better methods can be applied for more accurate detection of miRNA level differences. Hopefully, further experiments will result in finding the miRNA biomarker of gastric cancer.

microRNA, Cancer, Early diagnosis, Blood Plasma

Presentation: Poster