

miRNA IN ONCOLOGICAL PATHOLOGY: OVARIAN CANCER

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Introduction

Ambros and Ruvkun groups were the first who discovered microRNA(miRNA), lin-4, in 1993. During the time, lots of studies regarding to miRNA, its biogenesis, circulation, mechanisms and involvement in human disease were done. Today, miRNA is known as a small non-coding RNA molecule that functions in RNA silencing and post-transcriptional regulation of gene expression.

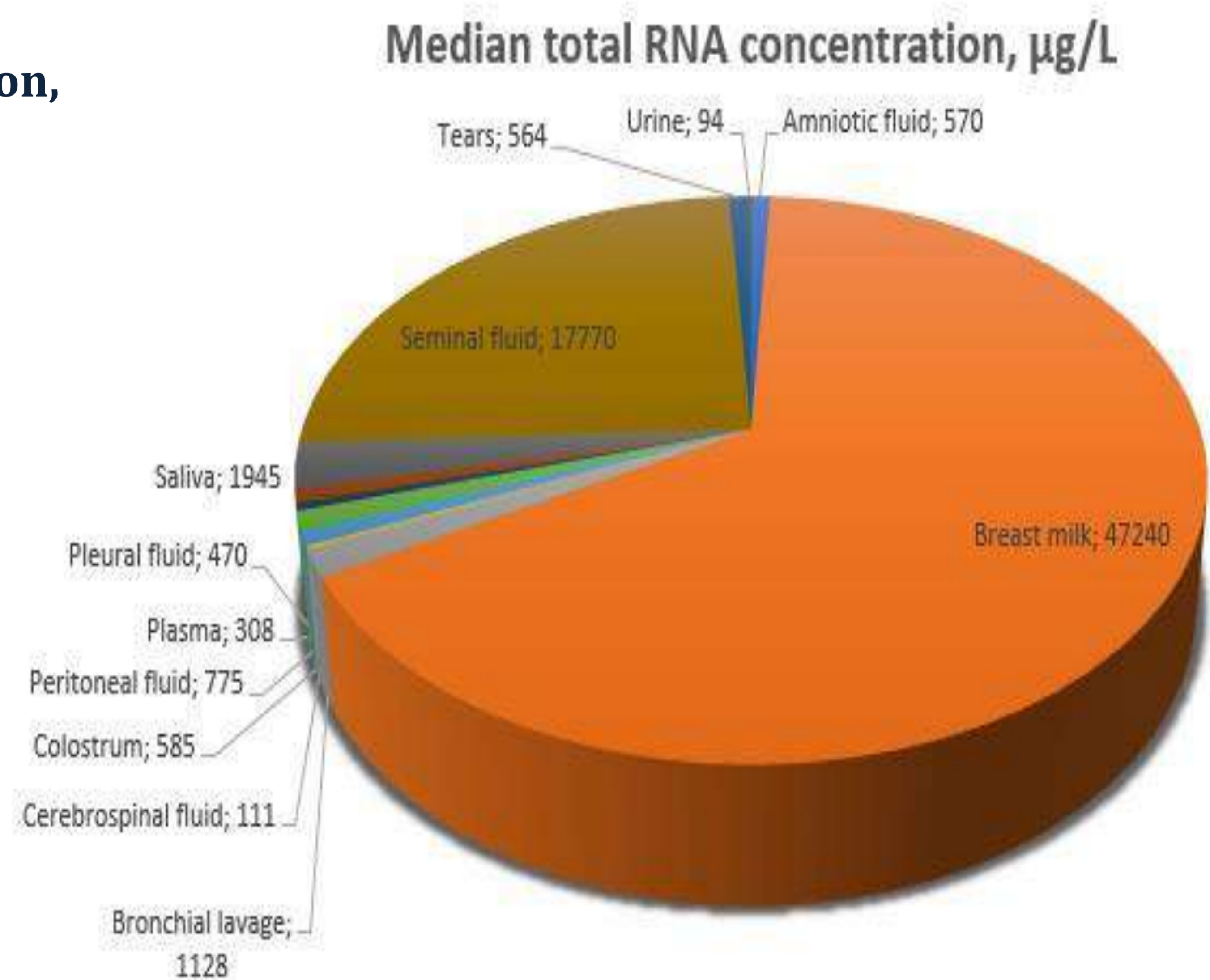
miRNAs errors and their defective interference in regulation of gene expression, as well as their long distance action can be correlated with the development and malignization of ovarian cancer, affecting women's health and recording the highest mortality rate among reproductive system tumors.

Keywords

miRNA, gene expression, ovarian cancer

Purpose

Identifying the possibilities of using miRNA in early diagnosis and efficient treatment of ovarian cancer, to state the relationship between miRNA and the development of ovarian cancer.



Material and methods

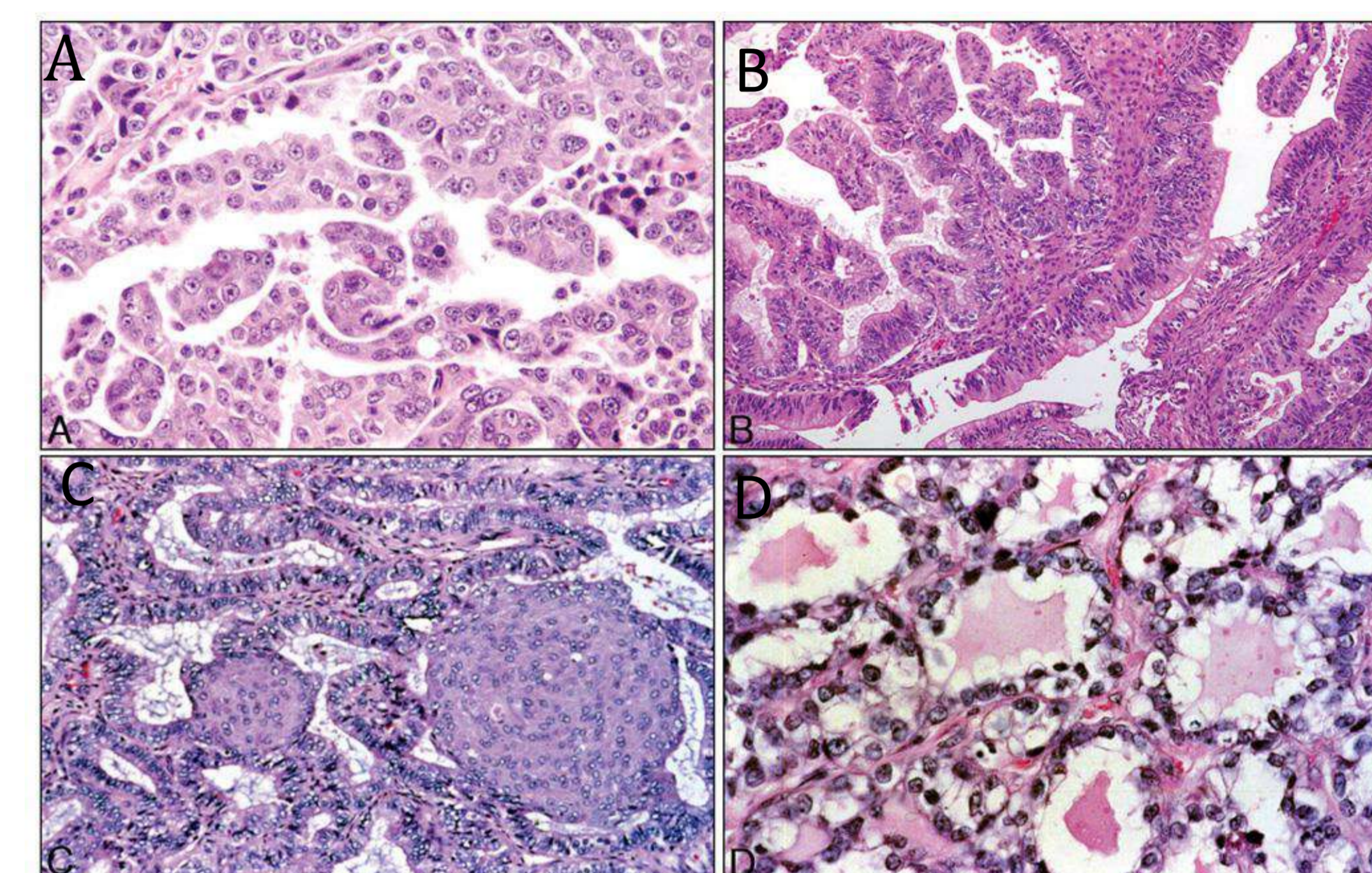
HINARI, PubMed and Cochrane Library databases were analysed.

Results

High levels of miR-200, miR-199a were identified, while, on the other hand, miR-140, miR-145, miR-15, responsible of tumor suppression, apoptosis and cell proliferation regulation, were low expressed.

A dramatic increase of miR-205 in the late stages of ovarian cancer was observed. Its function is to inhibit transcription factor 21 (TCF21) expression and its inhibitory effect on cell invasion.

Reestablishing the expression of let-7 can significantly reduce the growth of tumors, while inhibiting the expression of proto-oncogenes proteins RAS, HMGA 2, c-Myc, cdk 6.



A) Serous carcinomas
B) Mucinous carcinomas
C) Endometrioid carcinomas
D) Clear cell carcinomas

Conclusions

miRNA is important in regulating gene expression in cells. The modifications in miRNAs encoding genes are responsible of the development of ovarian tumors.

Serum miRNA can be used as a marker for early diagnosis of ovarian cancer.

Specimen	Alterations	miRNA
Serous carcinoma	↑	miR-205, miR-429, miR-141, miR-200c, miR-93, miR-16, miR-20a, miR-21, miR-27a, miR-200a, miR-200b, miR-200c
	↓	miR-320c, miR-383, let-7b, miR-99a, miR-125b, miR-145, miR-100, miR-31, miR-137, miR-132, miR-26a
EOC cell line	↑	miR-26, miR-26b, miR-103, miR-182, miR-203
	↓	miR-377, miR-432, miR-124a, miR-436, let-7d
Clear cell carcinoma	↑	miR-93, miR-126, miR-338-3p, miR-200a, miR-200c, miR-30a, miR-141, miR-182-5p, miR-200a-3p, miR-510
	↓	miR-383, miR-424-5p, miR-127, miR-155, miR-99b
Endometrioid carcinoma	↑	miR-21, miR-29a, miR-92, miR-30c1, miR-126
	↓	miR-342-3p, miR-181a-3p, miR-450b-5p, miR-155, miR-127, miR-99b

EOC: Epithelial ovarian cancer.