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A.C.Camargo Cancer Center
Especializado em Vida

Downregulated miR-205-5p decreases cell proliferation, migration, and invasion of human cervical cancer cells

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Background

Growing evidence supports that some epigenetic changes may contribute to the acquisition of hallmark capabilities during cervical tumor development and malignant progression. MicroRNAs (miRNAs) function to modulate the pathophysiologic mechanism in cervical cancer through the cancer signaling pathways regulation, which might offer a new approach for diagnosis and treatment cervical cancer patients in the future. Recent studies have shown that miR-205-5p could be used as good biomarkers for CIN 3 lesions. In addition, these miRNAs may be involved in crucial stages of cervical cancer progression.

Aim

To evaluate *in vitro* the functional role of miR-205-5p in the process of proliferation, migration, and invasion of cervical cancer cell lines.

Methods

qRT-PCR

Control cell: HaCaT

Cell lines panel: HeLa, SiHa, CasKi, C4-I, C33-A, HCB-514

- **Housekeeping:** U6

TRANSFECTION

miRNA inhibitor: *miRCURY LNA miRNA Inhibitors (*20ηM), named: anti-miR-130a-3p

Tranfection agent: siPORT NeoFX (2.5µL)

FUNCTIONAL ASSAY

Proliferation: Colony Formation Assay

Migration: Wound healing and transwell

Invasion: Transwell with Matrigel

Results

✓ **We identified that miR-205-5p were overexpressed in CaSki, C4-I, and HCB-514 cells:**

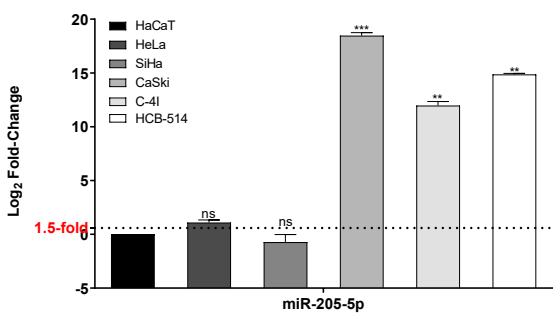

Figure 1. miR-205-5p was highly expressed in the cervical cancer cells. CaSki, C-4I, and HCB-514 cell lines had significantly higher expression of miR-205-5p than the non-tumorigenic epithelial cell line HaCaT. The standard deviation bars were also included. ns: not significant; **P< 0.0021; ***P <0.0002; ****P <0.0001.

✓ **Transfection for miR-205-5p inhibition:**

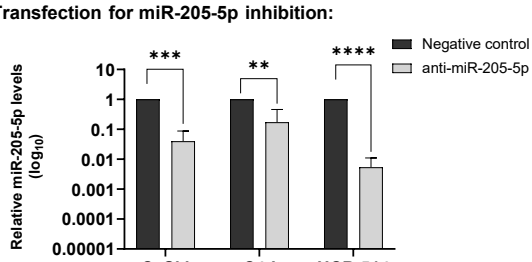

Figure 2. anti-miR-205-5p inhibition in the cervical cancer cells. The standard deviation bars were also included. ****P <0.0001.

✓ **Proliferation:**

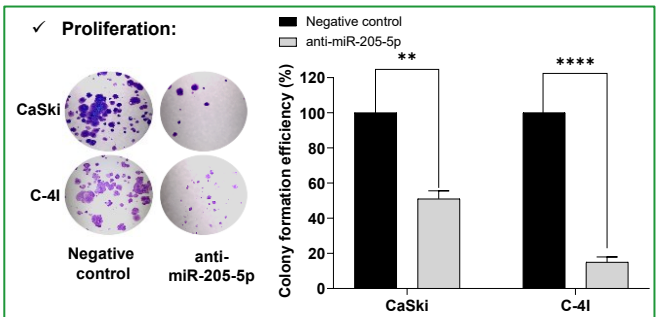

Figure 3. anti-miR-205-5p inhibited the proliferation of cervical cancer cells. A colony formation assay was used to test the proliferation of CaSki, and HCB-514 cells, which showed a smaller clone number in the anti-miR-205-5p group. The standard deviation bars were also included. ** P= 0.0021; **** P <0.0001.

✓ **Migration:**

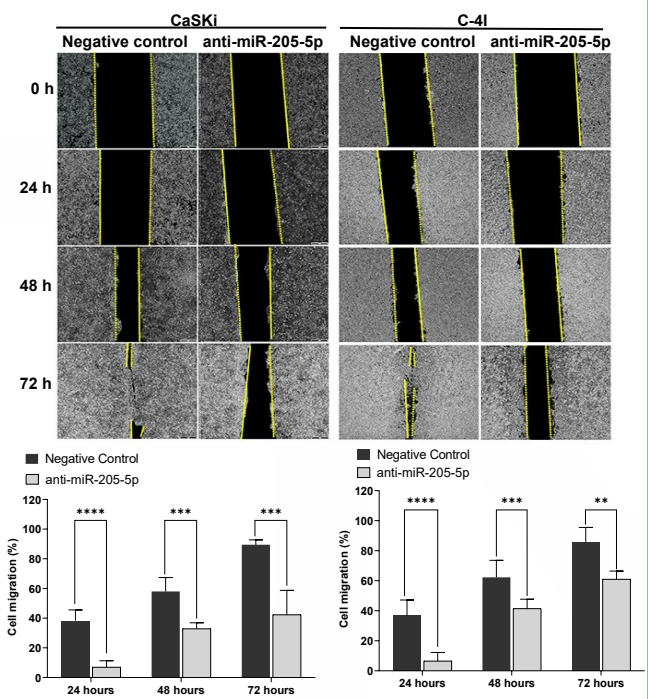

Figure 4. anti-miR-205-5p inhibited the migration of cervical cancer cells using wound healing assay. The standard deviation bars were also included. ** P= 0.0021; ***P <0.0002; **** P <0.0001.

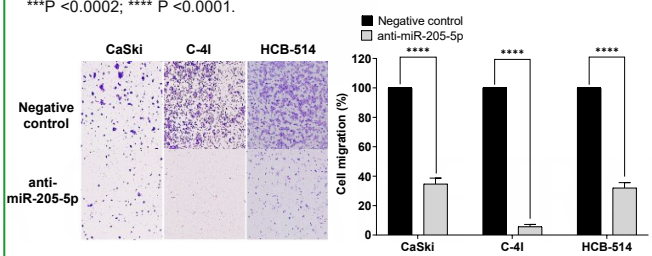

Figure 5. anti-miR-205-5p inhibited the migration of cervical cancer cells using Transwell assay. The standard deviation bars were also included. **** P <0.0001.

✓ **Invasion:**

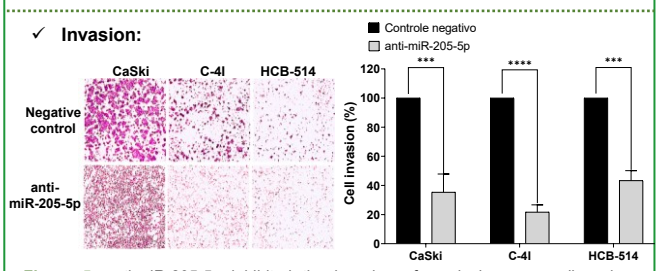

Figure 5. anti-miR-205-5p inhibited the invasion of cervical cancer cells using Transwell assay with Matrigel. The standard deviation bars were also included. ***P= 0.0016; **** P <0.0001.

Conclusion

Our findings reveal novel functional roles of miR-205-5p in human cervical cancer cell lines, which may provide new insights into its role in the cervical cancer progression and its potential value for clinical diagnosis.

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