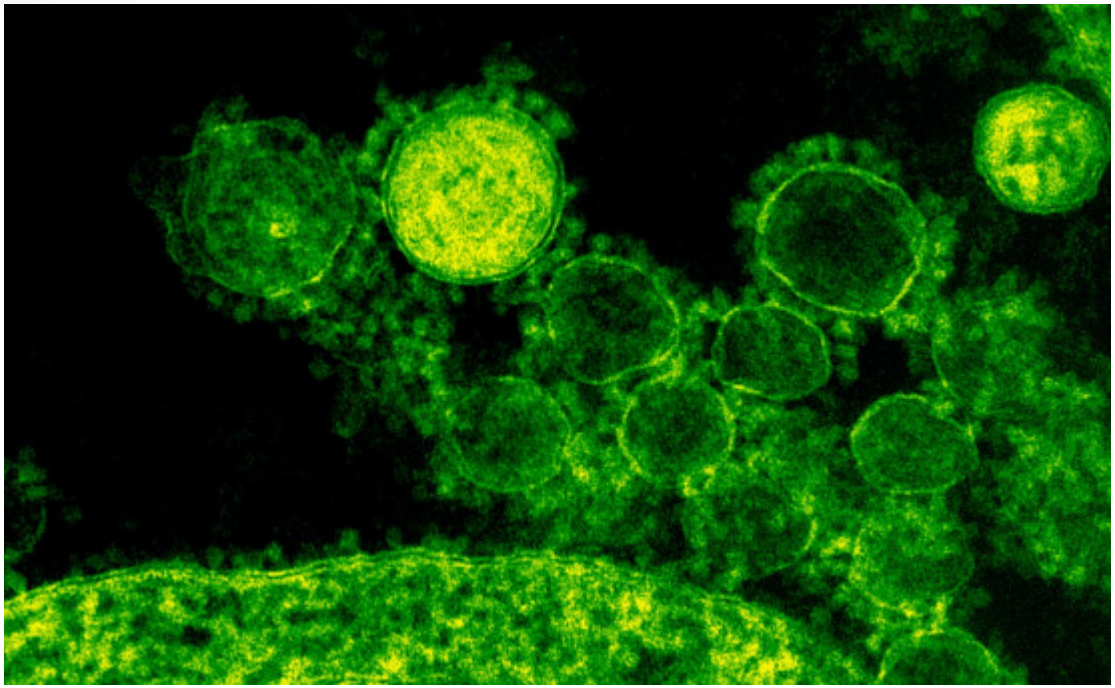
HIGH EFFICACY ONCOLOGICAL THERAPY BASED ON MIRNA



Mir-126 is a tumor suppressor of malignant pleural mesothelioma (MPM). Mir-126 can be delivered within tumor cells via exosomes, but the limit of this application is the low latency of mir-126 within tumor masses. This invention solves this problem, obtaining a targeted treatment of the tumor with a low pharmacological dose and with reduced secondary side effects.

PRIORITY NUMBER
102021000010001

KEYWORDS:
cancer, exosome release inhibition, Exosomes, Malignant mesothelioma, mir-126, miRNA-based therapy.

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ILO@UNITS.IT, ILO@UNIVPM.IT

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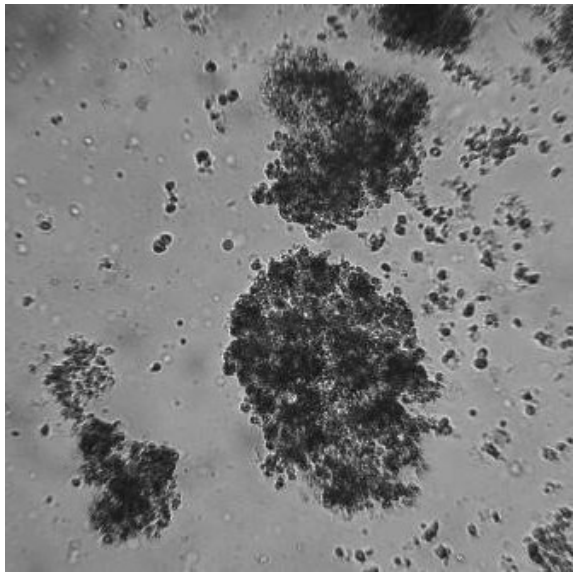
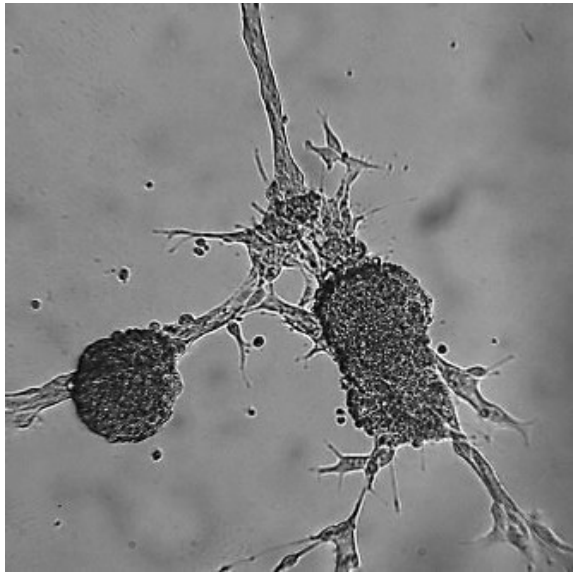
DESCRIPTION

Malignant mesothelioma is a cancer with few treatment options. The reintroduction of a tumor suppressor miRNA into the tumor has been proposed as a new cancer therapy, but the efficiency of this treatment is partially compromised by the low transport efficiency in vivo. Current approaches are mainly based on liposomal, polymeric and viral based vehicles, but still exhibit some toxicity. Exosomes are similar to liposomes, but their biogenesis guarantees excellent biocompatibility and low toxicity. Malignant mesothelioma is sensitive to mir-126 treatment. Mir-126, inserted inside the exosomes, is effectively incorporated by the cancer cells, but at the same time, it is eliminated by the cells themselves by releasing the exosomes. Treatment of malignant mesothelioma with an exosomal release inhibitor followed by treatment with exosomes enriched in mir-126 allows for the accumulation of miRNA in tumor cells, thus inducing massive cell death. Massive cell death (100% death in 48H) was observed by treating the tumor masses with an exosomal inhibitor (GW4869) and exo-miR-126.





APPLICATIONS

- Cancer treatment;
- Cancer Research;
- Pharmaceutical companies;
- Hospitals and care facilities.

ADVANTAGES

- High efficiency in introducing miRNA into cancer cells;
- Not immunogenic;
- Able to deliver miRNA by overcoming the stromal barrier;
- Selective treatment with reduced side effects.

ILO@UNITS.IT, ILO@UNIVPM.IT

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