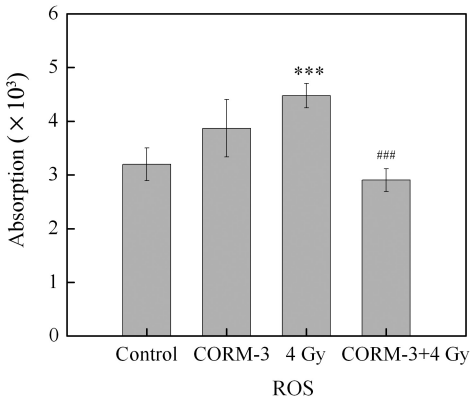

Fig. 1 Changes in the contents of ROS in zebrafish embryos. Each value is expressed as the mean ± SEM ($N = 3$). $^{***}P < 0.001$ compared with the control, $^{###}P < 0.001$ versus the CORM-3+ irradiation group for the irradiation group.

To investigate the effects of CORM-3 on zebrafish embryos induced by X-rays healthy developing zebrafish embryos were selected and divided into four groups as follows: control group (received no further treatment), drug group (raised in 10 μM freshly prepared CORM-3 solution at 4 hpf (hour post-fertilization, hpf), the irradiated group (received 4 Gy X-ray at 4hpf and raised by E3), and irradiated and drug group (raised in 10 μM freshly prepared CORM-3 solution at 4 hpf and received 4 Gy X-ray immediately). The mortality and malformation of the zebrafish embryos were observed until 3 dpf (day post-fertilization, dpf). The results showed that 4 Gy X-ray caused morphological abnormalities in zebrafish embryos, including pericardial sac edema, spinal column curving and tail curvature(Fig. 1). The mortality and malformation rates increased in irradiated group and both can be modified by CORM-3. At 24 hpf, we examined the ROS from each group. Our data showed that the CORM-3 reduced the production of ROS induced by X-ray, thus protecting the oxidative stress-related damage.

References

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3- 66 Toxic Effect of CORM-3 on the Development of Zebrafish Embryos*

Liu Bin, Song Jing'e, Si Jing, Zhou Rong, Wang Zhenguo and Zhang Hong

CORM-3, a water soluble transitional metal carbonyls based around ruthenium can release CO activated by light[1]. Although CORM-3 has resulted in promising preclinical data, such as anti-inflammatory, anti-apoptosis and vasodilatory effect, they present a poorly understanding on toxicological profile.

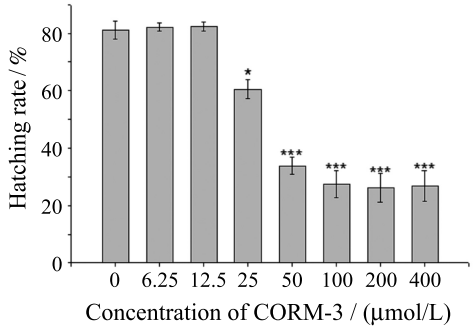

Fig. 1 Hatching rate of zebrafish embryos exposed to different CORM-3 concentrations at 72 h post fertilization. Hatching rate was calculated as number of embryos hatched out /number of live embryos ×100% at 72 h post fertilization. Data are expressed as means ±S.E. from three independent experiments ($^{*}P < 0.05, ^{**}P < 0.01, ^{***}P < 0.001$).

To evaluate the effects of CORM-3 on the development of zebrafish embryos, we selected the zebrafish embryos developing normally at the stage of blastocyst at 4 h post fertilization and transferred into 24-well culture plates with 2 embryos per well and then exposed to freshly prepared CORM-3 solution with E3 (0, 6.25, 12.5, 25, 50, 100, 200 and 400 μmol/L) for 4∼144 hpf for a continuing observation period on the development of zebrafish. Acute endpoints including hatching rate and embryonic/larval mortality were evaluated every 24 h(Fig. 1).

Our data showed that the mortality increased in a concentration-dependent manner. The hatching rate of embryos exposed to CORM-3 was not apparently affected by the low concentration. However, the results showed that the hatching rate decreased in a concentration-dependent manner induced by high concentration after exposed to CORM-3 solution and made a significant difference, indicating that the concentration over 25 μmol/L caused a strong inhibition of embryo hatching, and led to a direct delay of embryos development.

This study could provide scientific basis for safety of CORM-3 applied to the clinic.

Reference

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3 - 67 *MiR*-449a Overexpression Enhances the Radiosensitivity in Prostate Cancer Cells*

Mao Aihong, Liu Yang and Zhang Hong

Multiple links between *miRNA* activity and cancer have been established. Several *miRNAs* have been described as oncogenes while others act as tumour suppressors[1]. *MiR*-449a is a member of *miR*-34 family which locates on human chromosome 5q11.2, a region identified as a susceptibility locus in a variety of malignancies, including prostate cancer[2]. In line with the tumor-suppressive role of *miR*-34, *miR*-449a was shown to be significantly down-regulated in prostate cancer cell lines and tissue relative to normal tissues and plays a critical role in growth of prostate cancer cells [3,4].

In the present study, the pre-*miR*-449a and its flanking 200 bp sequence was cloned to the multi-clone site (MCS) of H1-MCS-CMV-GFP-SV40-Hygrcmycin, and the plasmid was transfected in the human prostate cancer cell (LNCaP), the expression of *miR*-449a was detected by Real-Time PCR. The biologic activity of mature *miR*-449a was determined by fluorescence quench method. The results showed that the expression of LNCaP was much higher than control group. H1-MCS-CMV-GFP-SV40-Hygrcmycin could efficiently express mature *miR*-449a with biologic activity. In the further study, we also found that overexpression of *miR*-449a in LNCaP cells inhibited proliferation and enhanced apoptosis induced by X-rays(as shown in Figs. 1 and 2).

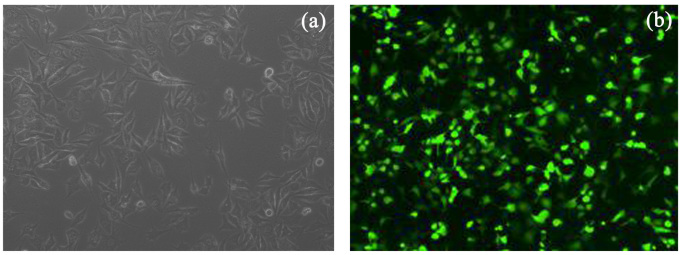

Fig. 1 (color online) LNCaP cells transfected with *miR*-449a overexpression vector. (a) Normal LNCaP cells before transfected. (b) LNCaP cells transfected with 5 μg *miR*-449a overe-xpression vector plasmid DNA or miRcon31control plasmid DNA (H1-MCS-CMV-GFP-SV40-Hygrcmycin) for 48 h.

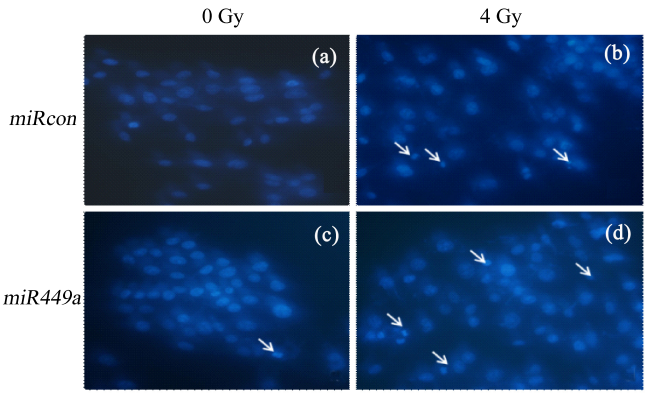

Fig. 2 (color online) *miR*-449a overexpression enhances apoptosis induced by X-rays in prostate cancer LNCaP cells. LNCaP cells were stained by Hoechest 333258 post-irradiation 4 Gy X-rays at 48 h. LNCaP were transfected with *micron* (a), (b) and *miR*-449a(c), (d).