

#1144 Suppression of metastasis of intratesticular inoculation of B16FO melanoma cells by a novel nutrient mixture in male athymic nude mice

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1. Introduction:

Testicular cancer (TC) is rare, but still represents one of the most common diseases in young men between the ages of 20-45. However, men of any age can develop this disease. The incidence in Caucasians is greater than in African Americans. Risk factors include undescended testis, Klinefelter syndrome, and HIV positive patients. If left untreated, it is almost certainly fatal. Metastasis is the major cause of cancer death. The most common place for TC to spread in the body is to the lung

2. Objective:

In this investigation, we studied the effect of a novel nutrient mixture (NM) containing ascorbic acid, amino acids and green tea extract that has been shown to exhibit anti-cancer activity on inhibition of B16FO melanoma cells inoculated intratesticularly

3. Materials and Methods:

Male athymic mice (n=12), 10-12 weeks of age, were inoculated with half a million B16FO melanoma cells in 100 µL of PBS into the right testis; the left testis was left untreated. After inoculation, the mice were randomly divided into two groups. Group A (n=6) was fed a regular mouse chow diet, while the mice in Group B (n=6) were fed the same diet but supplemented with 1% NM. Four weeks later the mice were sacrificed and the abdominal cavity was opened.

Composition of the nutrient mixture (NM)

Nutrient	Amount
Vitamin C (as ascorbic acid and as Mg, Ca and palmitate ascorbate)	710 mg
L-Lysine	1000 mg
L-Proline	750 mg
L-Arginine	500 mg
N-Acetyl Cysteine	200 mg
Standardized Green Tea Extract (80% polyphenol)	1000 mg
Selenium	30 µg
Copper	2 mg
Manganese	1 mg

4. Results:

1. Nude mice in the Control diet group exhibited extensive metastasis in the peritoneal cavity, which was totally masked by B16FO melanoma cells. The testes were severely enlarged and replaced by invading malignant melanoma cells. The capsular region of the testis was severely infiltrated with a population of mixed cells. In contrast, in the NM fed group, there was no evidence of peritoneal metastasis, but the testes were enlarged. Seminiferous tubules in the area of invasion showed evidence of degeneration.

Figure 1 - Representative gross photos of peritoneal cavities of nude mice injected with B16FO melanoma cells fed the Control or NM 1% diet (4 wks)

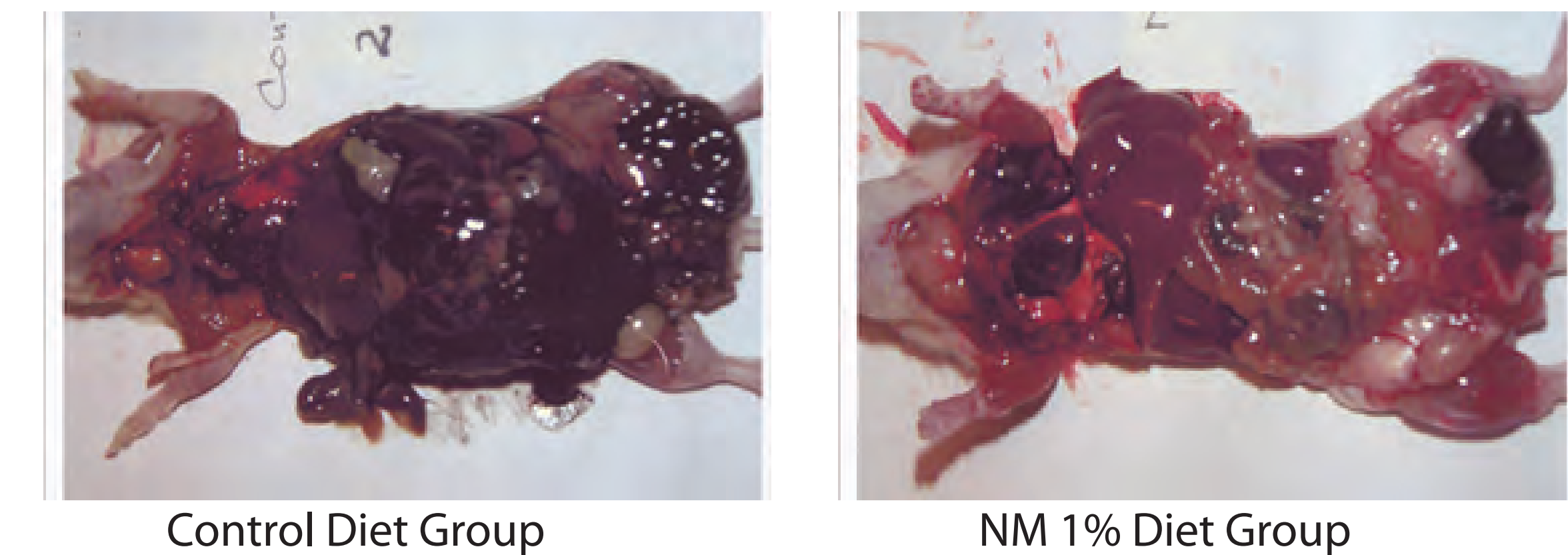


Figure 2 - Representative gross photos of nude mice testes in Control and NM 1% diet groups: Left testis untreated and right testis injected with B16FO melanoma cells (4 wks)

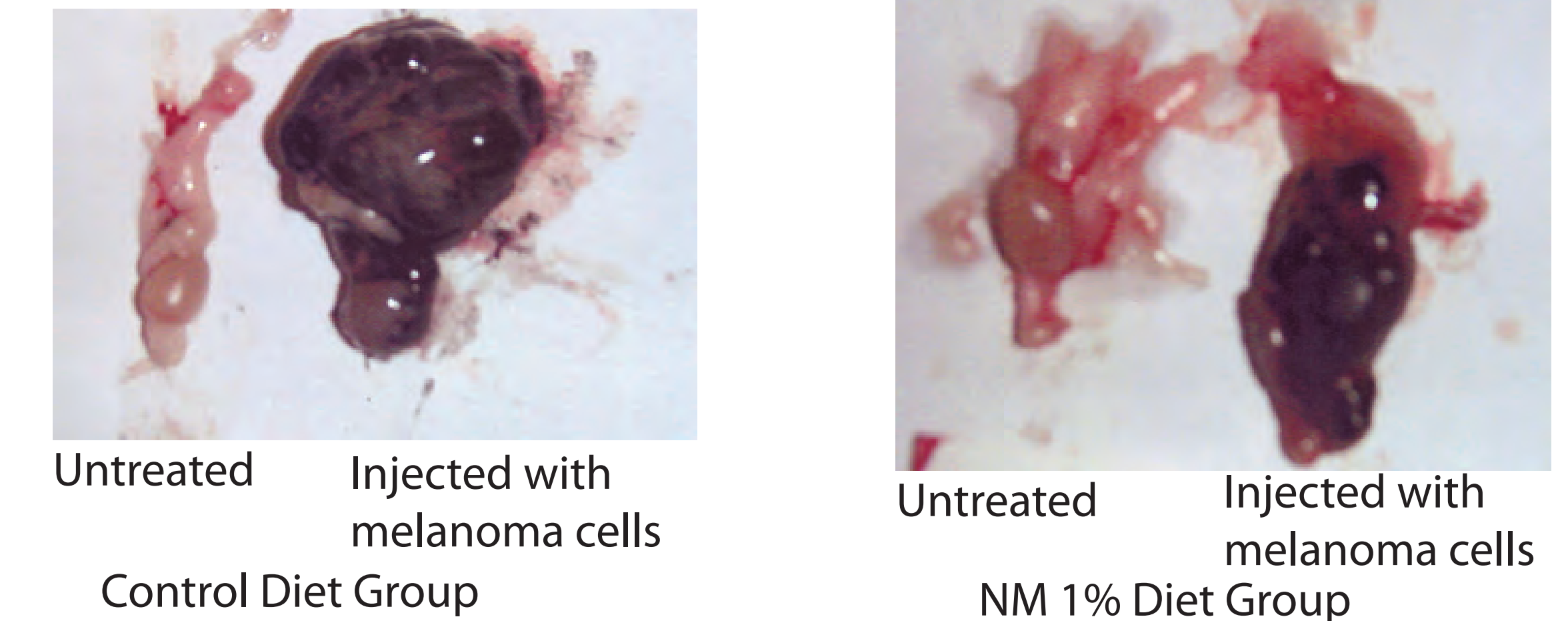


Figure 3- Representative gross photos and photomicrographs of testes from nude mice fed the Control diet (1 wk post injection)

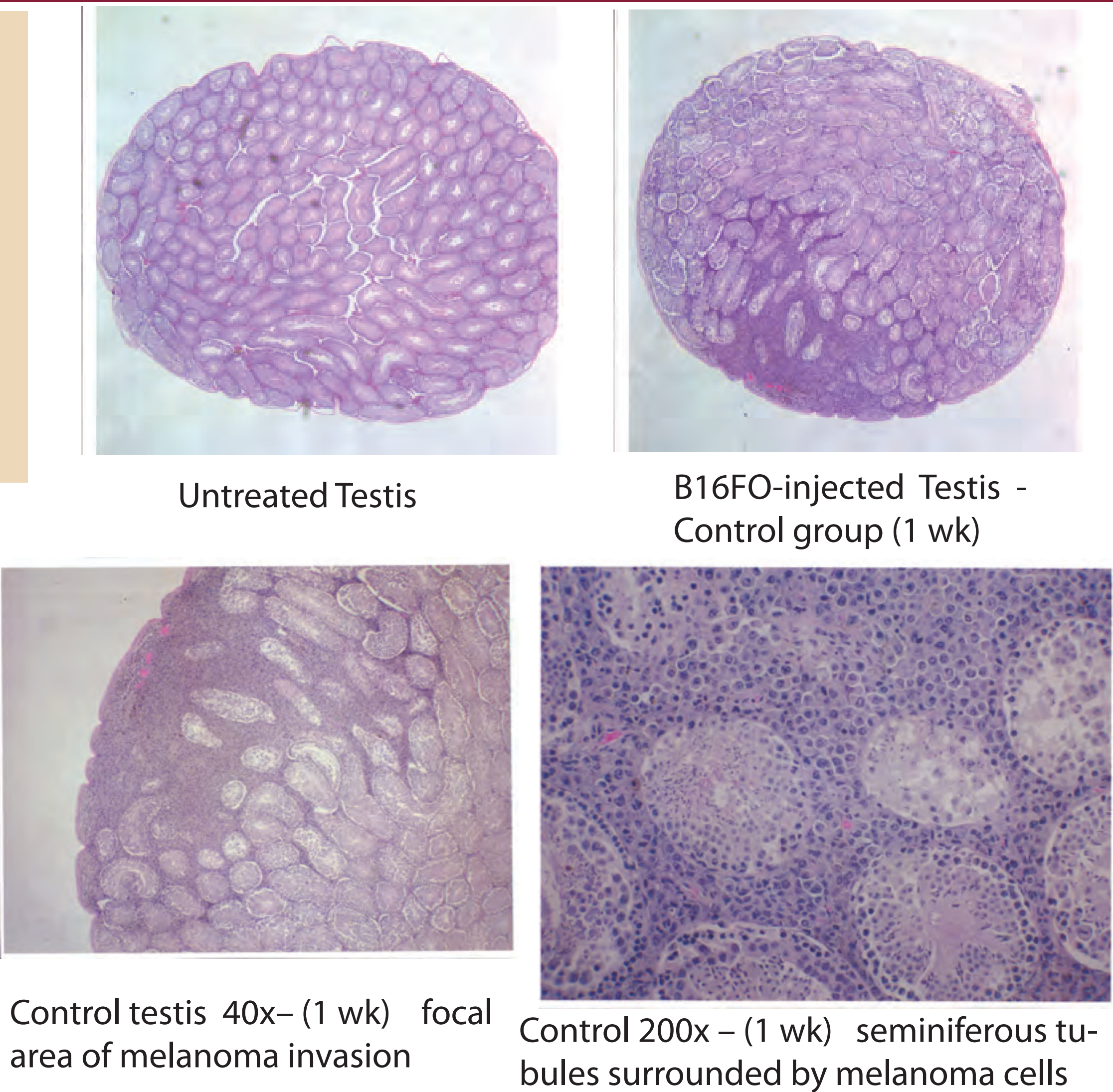
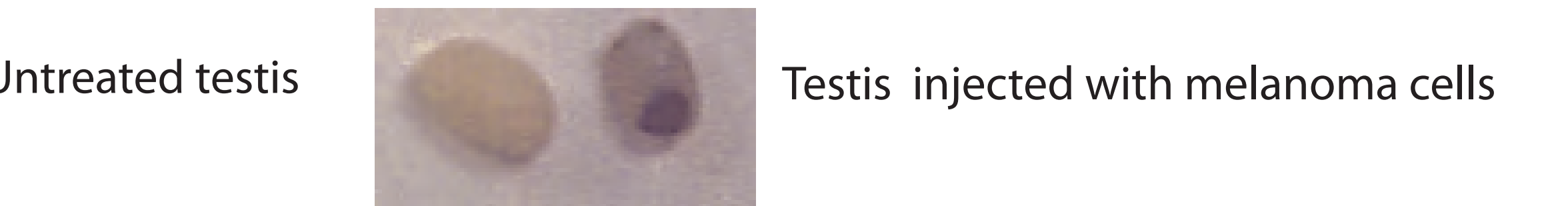


Figure 4- Photomicrographs of B16FO injected testis in nude mice fed the Control diet (4 weeks post injection)

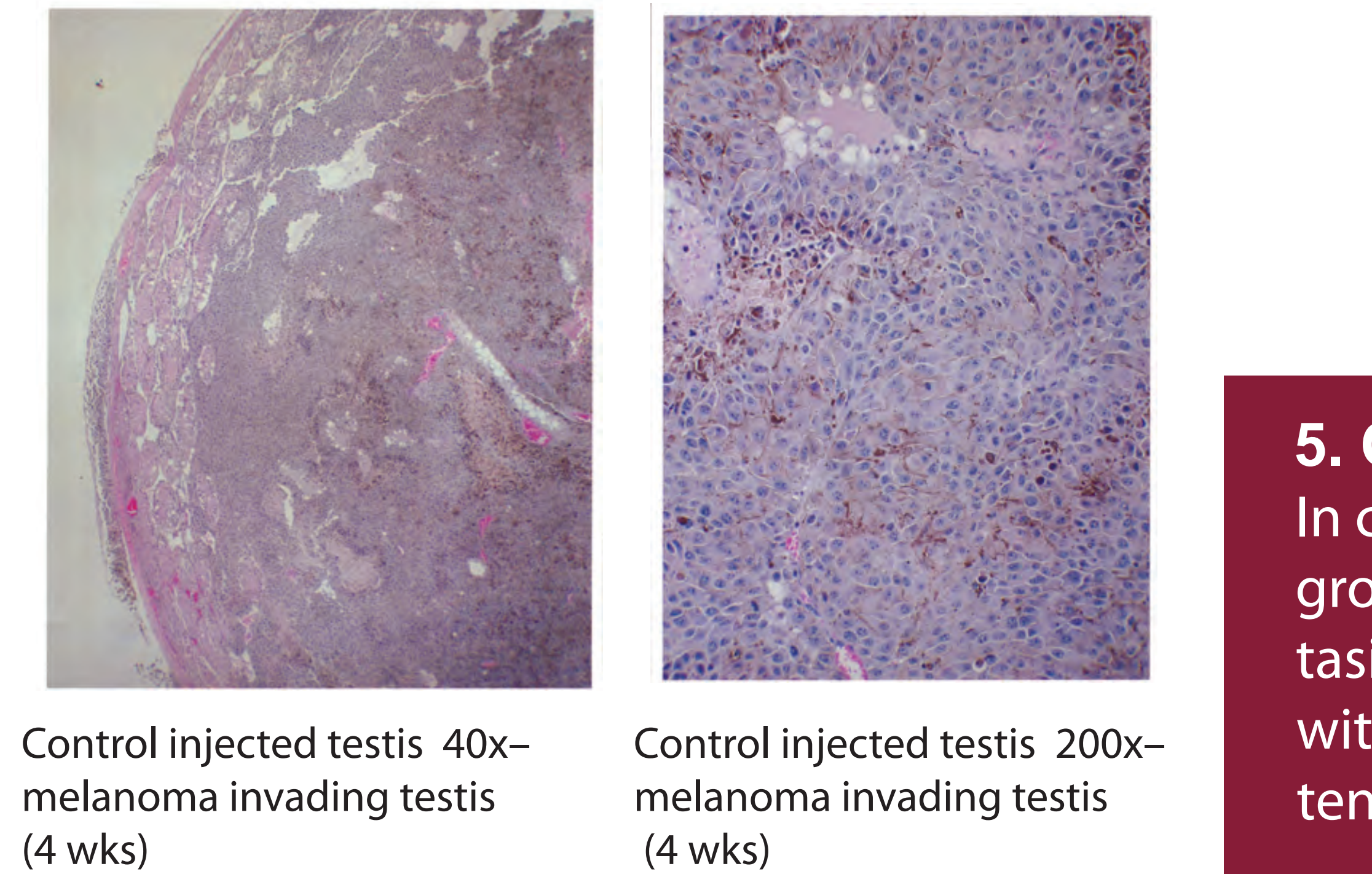
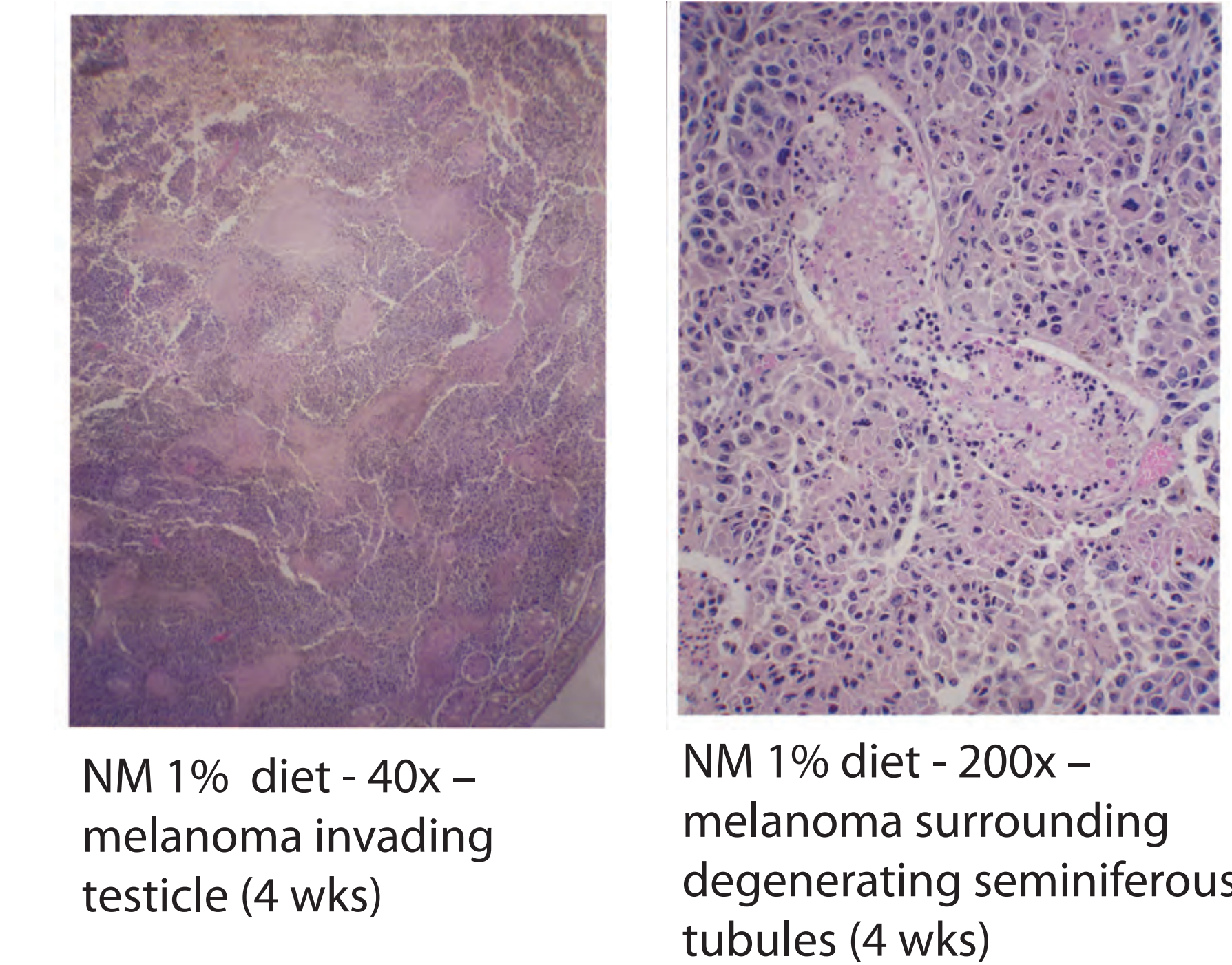


Figure 5- Photomicrographs of B16FO injected testis in NM 1% diet group of nude mice (4 wks post injection)



2. In all groups, there was no metastasis to liver, kidney and spleen. However, severe lung metastasis was observed in the Control group (2 out of 6) and mild in the NM 1% group (2 out of 6).

Figure 6- Representative gross photos of lungs from nude mice injected with B16FO melanoma cells intratesticularly fed the Control or NM 1% diet (4wks)

5. Conclusion:

In conclusion, the reduction in melanoma growth and invasion in testes and lung metastasis in nude mice fed NM 1% diet compared with the Control diet suggest that NM has potential to suppress tumor metastasis.