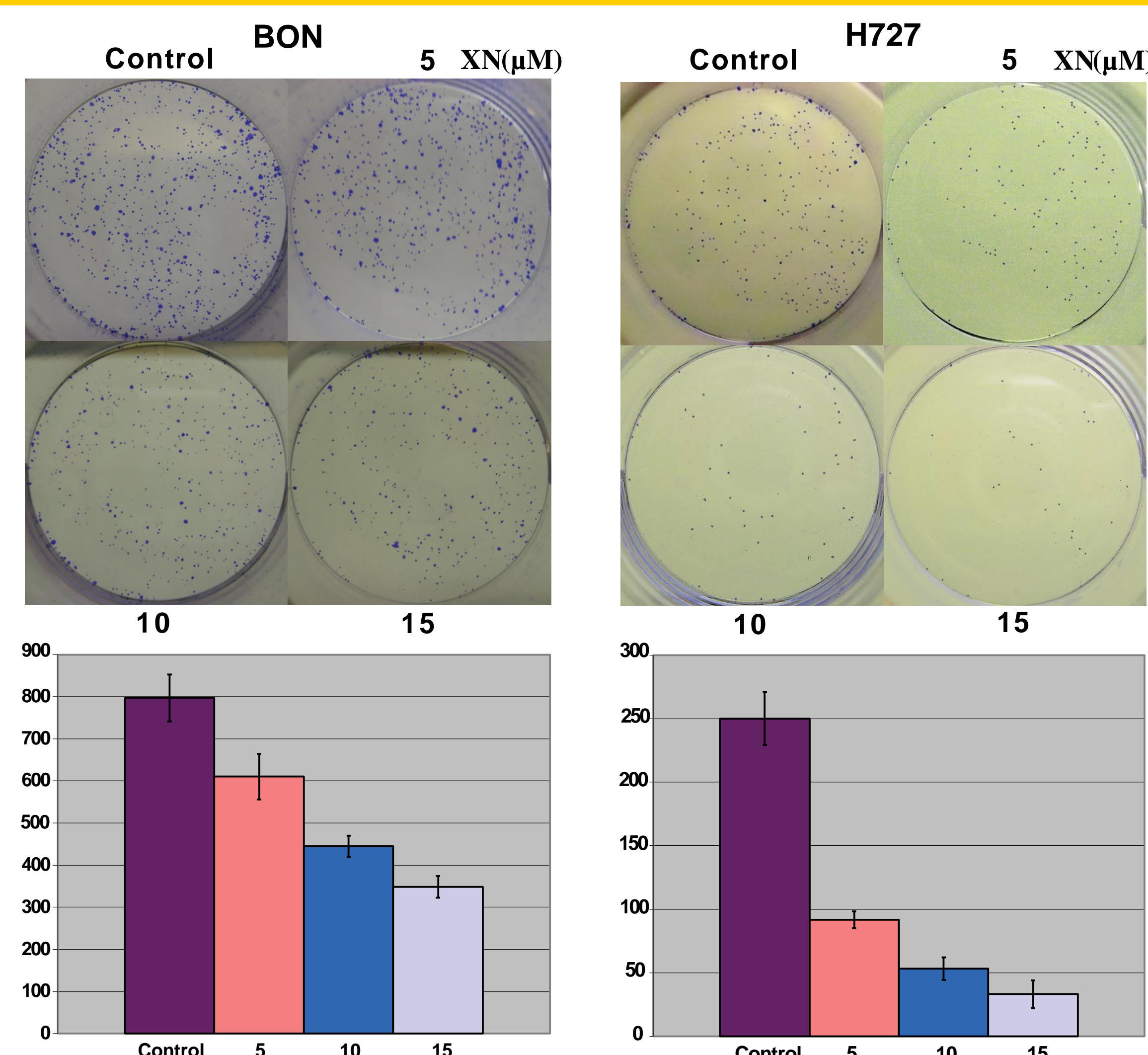


## Introduction

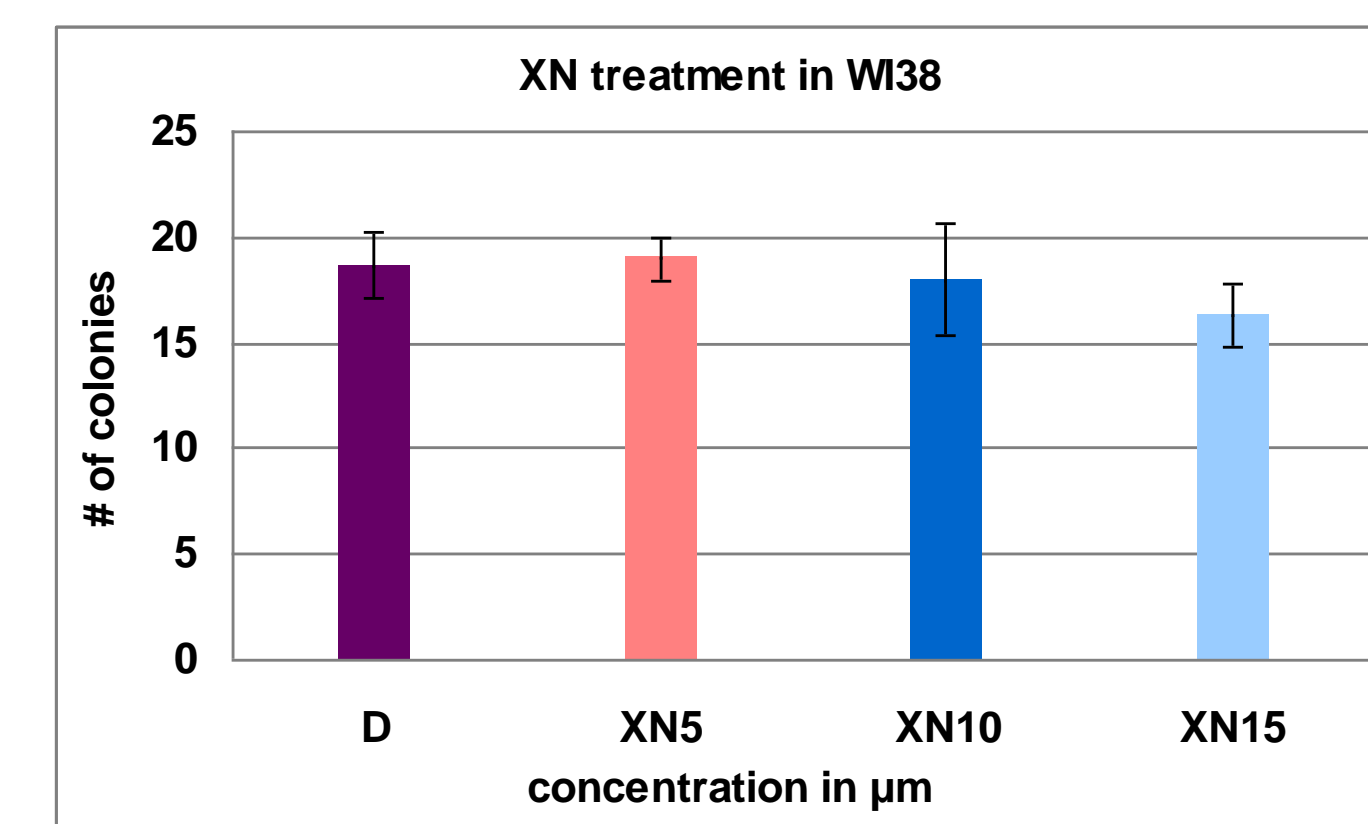
Besides surgery, there is no potential curative treatment for carcinoid tumors. Because these cancers are metastatic in nature and produce excessive amounts of various bioactive hormones, patients diagnosed with this malignancy will have poor quality of life due to carcinoid syndrome. Therefore, new anticarcinogenic agents are required to improve the effectiveness of treatment. Xanthohumol (XN) (Tetrahydroxy-3'-prenylchalcone) is a prenylated chalconoid found in hops and beer that has been found to have potential anticancer properties. Therefore, the purpose of this study was to evaluate the effectiveness of xanthohumol (XN) on carcinoid cancer growth in vitro and in vivo. Three cell lines were used for these experiments including BON (pancreatic), H727 and UMC-11 (both pulmonary) carcinoid cells.

## Results

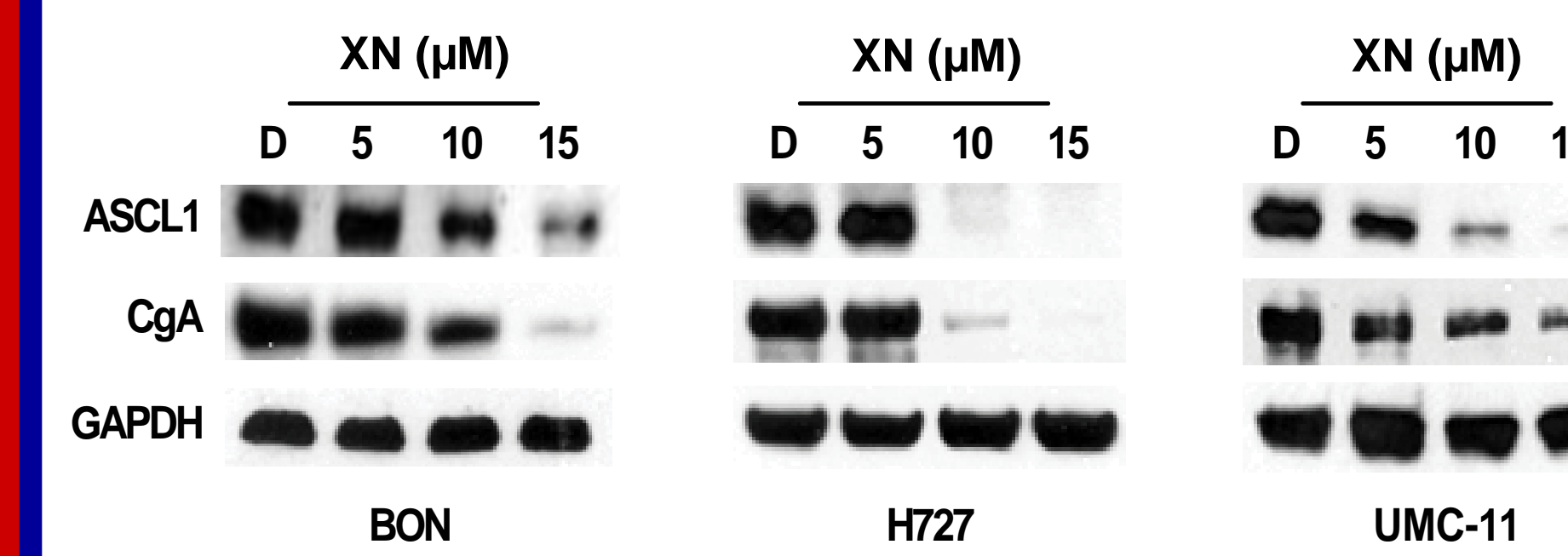


XN treatment significantly reduces carcinoid cancer cell viability in both BON and H727 cells as determined by colony forming ability using clonogenic assay.

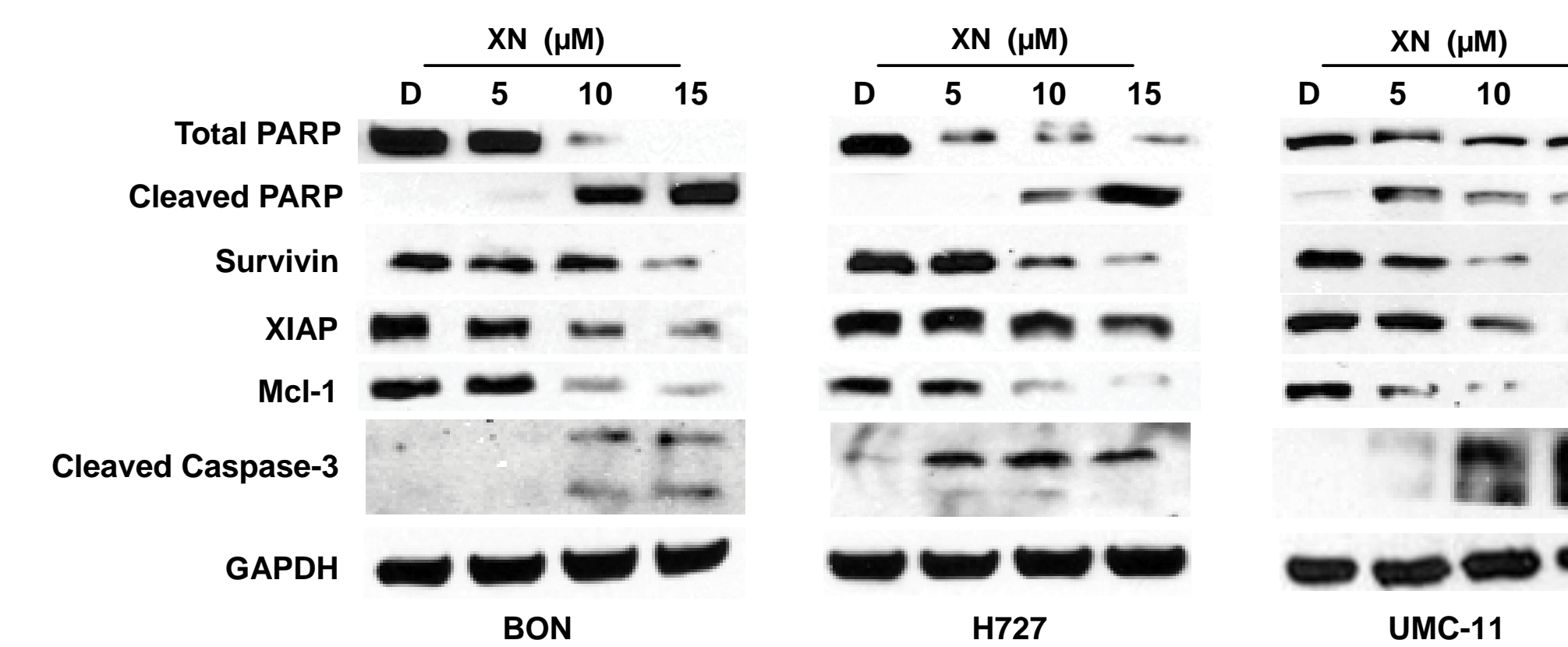
## Xanthohumol treatment appears to be specific to cancer cells



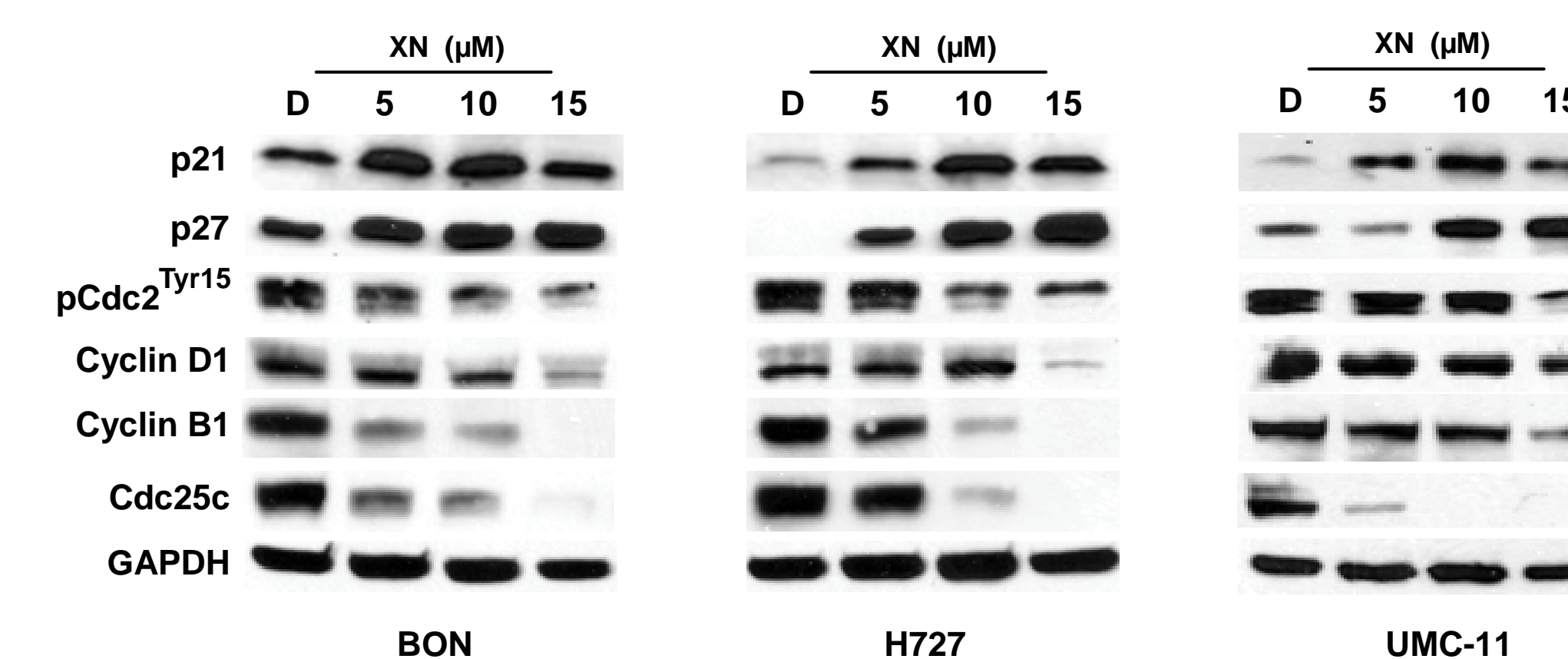
## Xanthohumol treatment reduces neuroendocrine markers ASCL1 and CgA



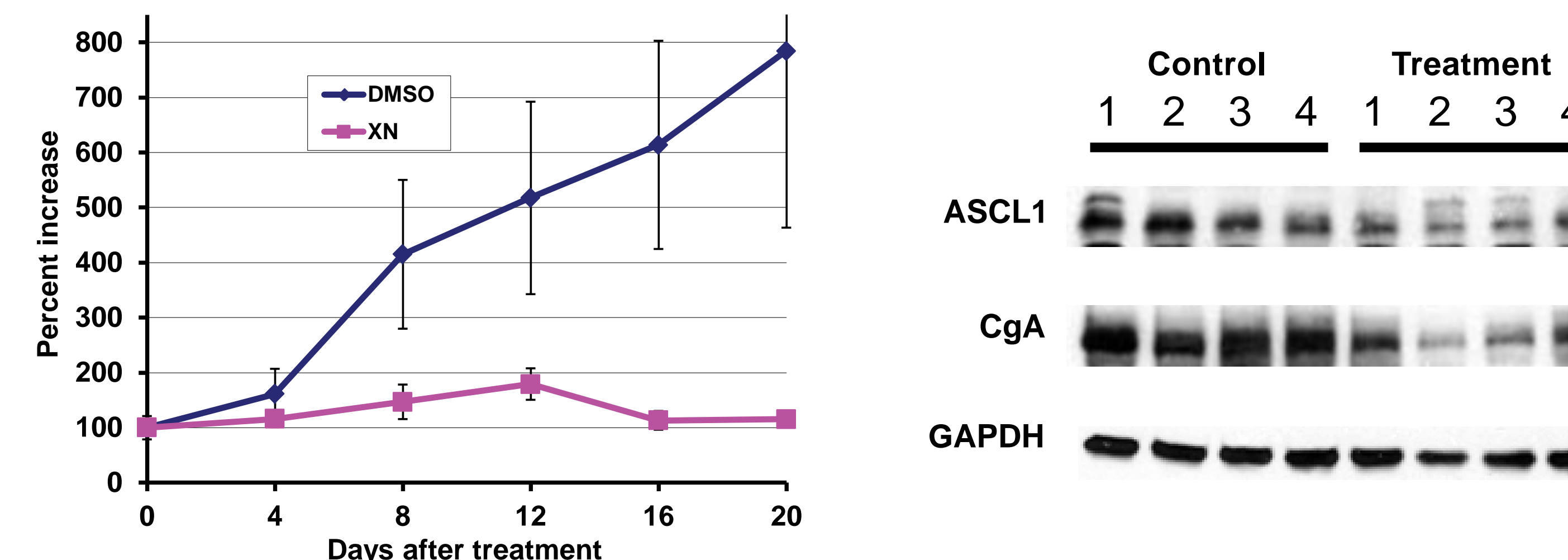
## Xanthohumol treatment induced apoptosis



## Xanthohumol treatment induced cell cycle arrest



## Carcinoid tumors in the mouse xenograft experiment showed a significant reduction in tumor volume and NE markers



## Summary

1. Xanthohumol treatment inhibits carcinoid cancer cell viability and growth in both BON and H727 cells as determined by colony forming ability using clonogenic assay.
2. Normal cell (WI-38) growth is not affected by xanthohumol treatment, signifying that XN induced growth inhibition appears to be specific to cancer cells.
3. Xanthohumol treatment significantly reduces neuroendocrine markers ASCL1 and CgA in each cell line investigated.
4. In all three cell lines, the reduction in cell viability and cell growth seems to be caused by both cell cycle arrest and apoptosis, as confirmed by western blot.
5. Importantly, xanthohumol treatment reduces tumor volume in xenograft model compared to control mice.

## Conclusions

1. Our findings demonstrate for the first time the anti-proliferative effects of xanthohumol in carcinoid cell lines in vitro and in vivo.
2. Since XN has shown bioavailability and nontoxicity to normal cells, further investigation of this compound is warranted in order to be a potential treatment for carcinoid cells.

## Acknowledgements

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