

ANTIPROLIFERATIVE, ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF EXTRACTS OBTAINED FROM SINAPIS ALBA L. AND SINAPIS NIGRA L.

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High Brassicaceae consumption reduces the risk of developing several cancer types, probably due not only to the presence of fibers, carotenoids, flavonoids and vitamins, but also to their glucosinolate amount (Ishida et al., 2014). Extracts from *Sinapis nigra* L. and *Sinapis alba* L. have been obtained from leaves and seeds under different conditions to evaluate their antioxidant, antiproliferative and antimicrobial activities. The better yields in glucosinolate amounts, mainly sinalbin in *S. alba* and sinigrin in *S. nigra*, have been obtained from grinded seeds using the EtOH/H₂O 8:2 mixture; the same extracts had also the greatest antioxidant power in vitro. The highest antiproliferative activity in both non-tumour (hTERT-HME1 and podocytes) and tumour cell lines (HCT 116 and HT-29) was induced by *S. alba* seeds extract. To evaluate whether *Sinapis* spp effect was only due to glucosinolate content or it was influenced by the extracts' complexity, cells were treated with either extracts or glucosinolates in the presence of myrosinase (0.1 U/mL). Pure sinigrin did not modify cell proliferation, while pure sinalbin was less effective than the extract. The addition of myrosinase increased the antiproliferative effects of the *S. nigra* extract and sinigrin. Antiproliferative activity was correlated to the modulation of MAPKs, which was cell and extract-dependent. Cell cycle analysis evidenced a proapoptotic effect of *S. alba* on both tumour cell lines and of *S. nigra* only on HCT 116 cell line. Both selected extracts showed good antimicrobial activity in disc diffusion tests and on ready-to-eat fresh salad. All together, these results underline the potential effects of *Sinapis* spp in chemoprevention and food preservation.

Ishida et al. (2014). *Breed sci.* 64, 48-59.