

Healthy and tasty meat using marinades

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OBJECTIVES

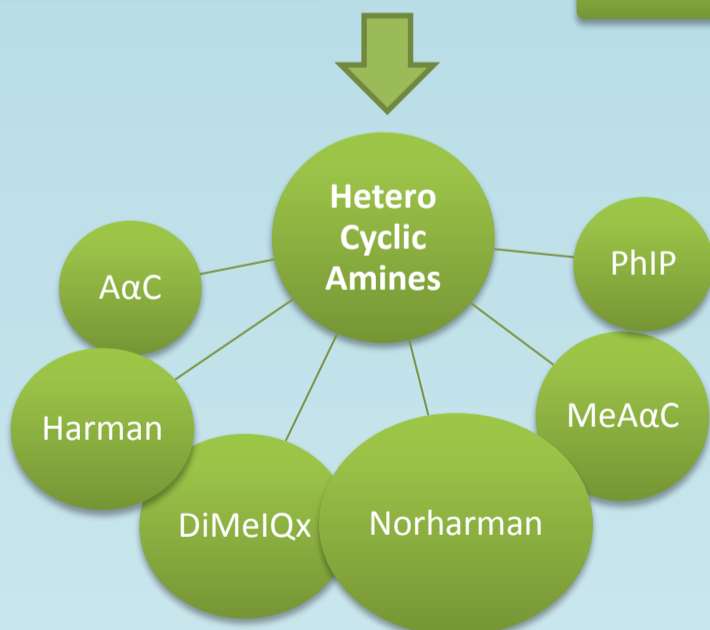
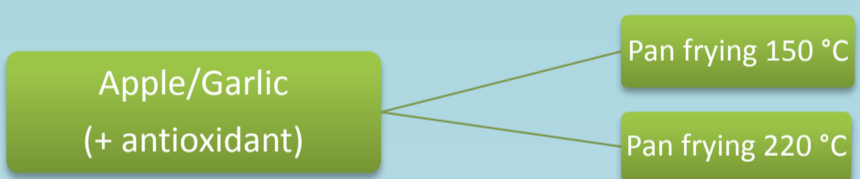
To examine the effects of:

1. marinades with natural antioxidants (apple puree and garlic marinade) and
2. panfrying temperature on Hetero cyclic Amines (HCA) formation and eating quality of pork patties and pork chops.



METHODS

- Pork patties were mixed with apple puree
- Pork chops were marinated with garlic and oil (16 - 17 h)
- Pan frying at 150 °C and 220 °C until a core temperature of 70 °C
- Sensory profile with 9 trained assessors
- Liquid Chromatography Mass Spectrometry (LCMS)



RESULTS

- The concentration of PhIP was significantly reduced in the pork patties with apple puree ($p = 0.003$) and the pork chops with garlic marinade ($p = 0.04$).
- The formation of HCA was significantly reduced at 150 °C compared to 220 °C.
- Pan frying temperature (150 °C) and marinades with antioxidants reduced HCA, but it also affected eating quality especially taste and appearance.
- Use of garlic or apples in marinades could be beneficial in reducing carcinogenic compounds during high temperature cooking practices.

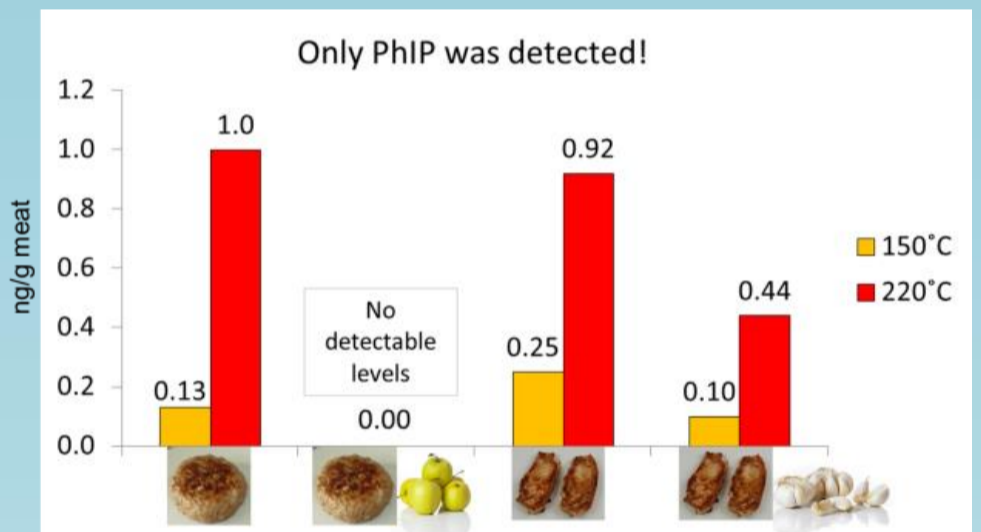


Figure 1. Apple puree and garlic can be used as antioxidants to reduce the formation of HCA in pork patties and pork chops respectively

CONCLUSION

Using marinades with antioxidants and /or frying at a low temperature have reducing effects on the formation of carcinogenic compounds in pork.



RECOMMENDATIONS	HEALTH	EATING QUALITY
+	+	✓
+ or	+	✓
+ +	✓	✓

PERSPECTIVES

- Development of marinades based on documented antioxidative activity.
- Maintain good eating quality of meat along with healthy cooking practice.
- Link between cancer and red meat should be debated in relation to general diet and lifestyle and its nutritional qualities; satiety, iron content and protein quality.

Antioxidative activity in selected foods, spices and herbs			
	ORAC value ^{1*)}	I oxygen ^{2*)}	Conc. in Extract
	µmo1TE/100 g		
Garlic, fresh	5,3460	1.73	1:5
Apple	3,898	1.01	1:5
Oregano, dried	200,1290	2.82	1:10
Sumak	312,400	2.82	1:5
Acerola	70,0000	3.61	1:5

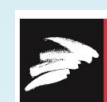
^{1*)}ORAC values (Oxygen Radical Absorbance Capacity)

<http://modernsurvivalblog.com/health/high-orac-value-antioxidant-food-top-100>
<http://www.oracvalues.com>

^{2*)} I_{oxygen} = $v(O_2)/v(O_2)_{blank}$



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