NOTÍCIAS PROJECTO ICAPP

Divulgação do projeto n.º 72109 ICAPP-Investigação em Carnes Alentejanas de Porco Preto

O projeto **ICAPP - Investigação em Carnes Alentejanas de Porco Preto**, objeto de cofinanciamento público ao abrigo do Sistema de Incentivos à Investigação e Desenvolvimento Tecnológico - Projetos em Co Promoção, envolve a cooperação de 6 entidades autónomas e independentes uma das outras: Armazéns de Mercearia e Avícola Marvanejo Lda., Salsicharia Estremocense S.A, Terrius Food & Tourism Lda., Mendes & Gonçalves S.A, Q-Staff - Consultoria Lda., e uma entidade do sistema científico nacional, a Universidade de Évora.

Para a disseminação dos principais resultados do projeto, o consórcio executou o seguinte plano de divulgação:

- ✓ Congresso Internacional CEF 14:
  - Cidade/País: Nantes - França
  - Datas de realização: 20 a 23 de junho de 2023
  - Participantes: Universidade de Évora e Terrius Food & Tourism Lda.,

The effect of glazing on texture and sensory properties on Alentejano pig meat

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3 - Departamento de Fitotecnia, Escola de Ciências e Tecnologia, Universidade de Évora, Pólo da Mitra, Ap. 94, 7006-554, Évora, Portugal
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Background and aim:

The process of glazing is commonly used for preserving seafood, and it significantly reduces the occurrence of rancidity caused by oxidation. This is due to the low solubility of oxygen in ice, decreasing the occurrence of protein desnaturation (Zoldos et al., 2011). Moreover, glazing helps to minimize water loss, thus positively impacting the overall texture and sensory attributes of the food. **In this study, we aim to investigate the impact of glazing meat from "Alentejano" pigs (a Portuguese breed) on its texture as measured by Warner-Bratzler shear force (WBSF) and sensory evaluation.**

Methods:

3 batches with 3 replicates of each modality

latissimus dorsi muscle (secreto)(150g)

Criogenic freezing (control)

Glazing freezing

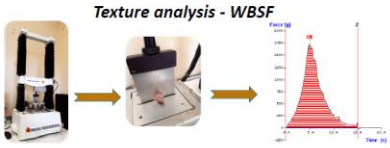
The meat was maintained at -21 ºC and humidity of 100% until sample are collected

Sensorial analysis

Descriptive/quantitative analysis
Scale from 1 to 100

10 trained panellists

Texture analysis - WBSF



Determination of shear force using StableMicroSystem TA-Hdi texturometer

Results

Texture analysis

t	Parameter	Shear Force
0	Control	40.978±19.07 a
6	Control	38.174±20.34 a
	Glazing	39.112±19.93 a

No significant differences between control and glazing were observed, according to WBSF values (p=0.799).

Sensorial analysis

t	Parameter	Color intensity	Off Colors	Hardness	Fibrosity	Succulence	Flavour Intensity	Negative flavors	Overall perception
0	Control	57.930±2.06 a	0.00±0.00 a	49.719±1.2 a	19.21±2.99 a	40.491±2.49 a	56.807±2.48 a	0.088±1.49 a	69.544±2.24 a
6	Control	58.313±2.76 a	0.00±0.00 a	50.781±1.7 a	26.063±3.99 a	53.906±3.33 b	58.844±3.32 a	5.406±1.9 ab	57.375±2.99 b
6	Glazing	69.909±2.17 b	0.394±0.12 b	53.758±1.6 b	22.758±2.93 a	43.636±3.28 a	51.970±3.27 b	9.485±1.95 b	57.485±2.94 b

- ✓ Regarding sensory analysis, glazed meat showed **higher color intensity** (p=0.015) and **hardness** (p<0.01), but **lower succulence** (p<0.01) and **flavour intensity** (p<0.01) values;
- ✓ **No significant differences** were observed in fibrosity and overall perception parameters compared with control.

References:

1. Caine, W. R., Aalhus, J. L., Best, D. R., Dugan, M. E., & Jeremiah, L. E. (2003). Relationship of texture profile analysis and Warner-Bratzler shear force with sensory characteristics of beef rib steaks. Meat Science, 64(4), 333–339.
2. ISO 8586-1 (1993). Sensory analysis—General guidance for the selection, training and monitoring of assessors—Part 1: Selected assessors.
3. ISO 8589 (2012). Sensory analysis—General guidance for the design of test rooms.
4. Zoldos, P., Popelka, P., Marcincak, S., Nagy, J., Mesarcov, L., Pipova , M., Mal, P. (2011). The effect of glaze on the quality of frozen stored Alaska pollack (Theragra chalcogramma) fillets under stable and unstable conditions. Acta Veterinaria 80, 299-304.

Conclusions

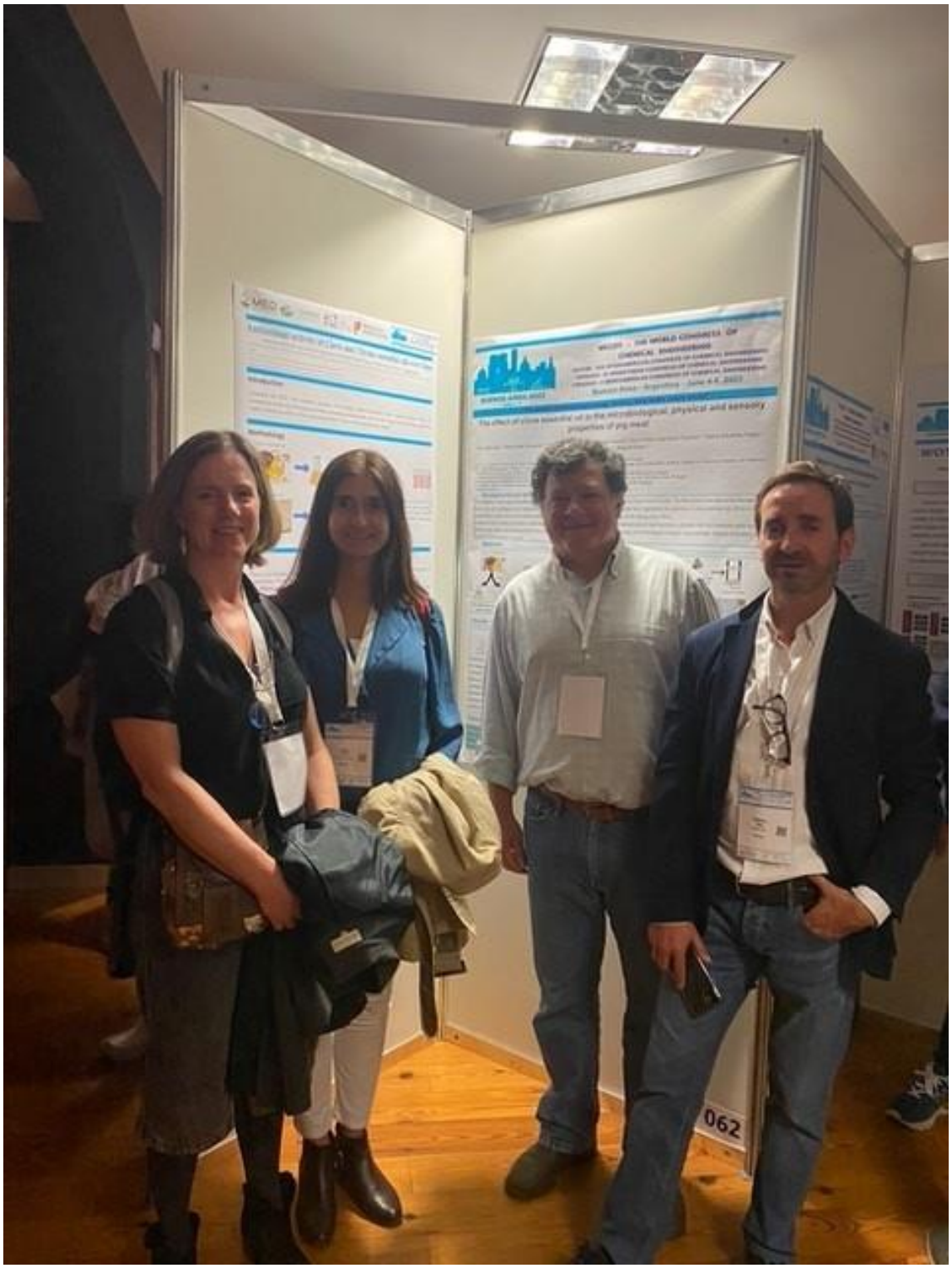
Based on the findings, it can be concluded that glazing does not offer any significant benefits for up to six months of preservation of meat from "Alentejano" pigs . However, further investigation is required to determine whether it may prove to be more advantageous for extended storage periods.

Acknowlegments

Work supported by the ICAPP project (POCI-01-0247-FEDER-072109), co-financed by FEDER through Compete 2020.

✓

- ✓ Congresso Internacional WCCE11 11th World Congress of Chemical Engineering:
    - Cidade/País: Buenos Aires - Argentina
    - Datas de realização: 2 a 6 de junho 2023
    - Participantes: Universidade de Évora, Q-Staff - Consultoria Lda., e Terrius Food & Tourism Lda.,



BUENOS AIRES 2023
JUNE 4 - 8

WCCE11 - 11th WORLD CONGRESS OF CHEMICAL ENGINEERING
IACCHE - XXX INTERAMERICAN CONGRESS OF CHEMICAL ENGINEERING
CAIQ2023 - XI ARGENTINIAN CONGRESS OF CHEMICAL ENGINEERING
CIBIQ2023 - II IBEROAMERICAN CONGRESS OF CHEMICAL ENGINEERING
Buenos Aires - Argentina - June 4-8, 2023

"The global chemical engineering working for a better future world"

The effect of clove essential oil in the microbiological, physical and sensory properties of pig meat

Ana Galveias[1], Maria Inês Rouxinol[2], Sara Ricardo-Rodrigues[2], Marta Laranjo[2], Ana Cristina Agulheiro Santos[2,3], Maria Eduarda Potes[2,4], Patrícia Capelo Soares[2,5], Miguel Elias[2,3] *

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3 - Departamento de Fitotecnia, Escola de Ciências e Tecnologia, Universidade de Évora, Pólo da Mitra, Ap. 94, 7006-554, Évora, Portugal
4 - Departamento de Medicina Veterinária, Escola de Ciências e Tecnologia, Universidade de Évora, Pólo da Mitra, Ap. 94, 7006-554, Évora, Portugal
5 - Q-Staff – PACT – Parque do Alentejo de Ciência e Tecnologia, Rua Luis Adelino Fonseca, Lote 1a, 7005-841, Évora, Portugal
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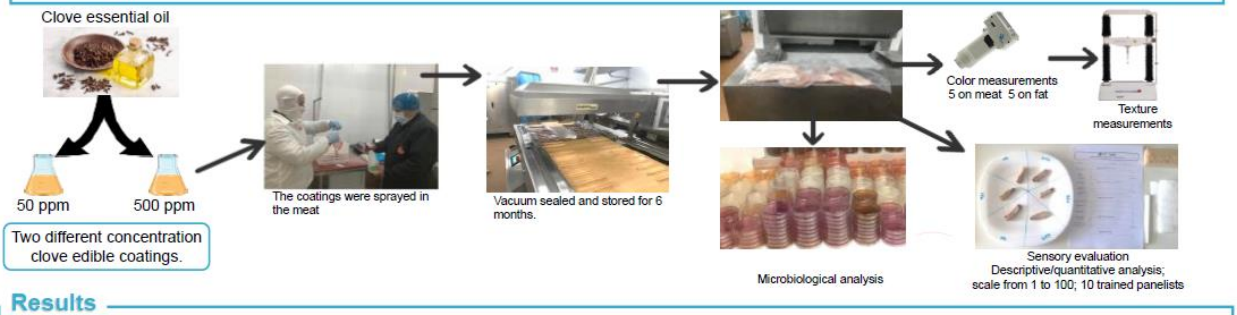
Background and aim:

The oxidation of fatty acids (rancidification) is one of the main problems that limits the shelf life of some frozen foods as meat. The fatty acids in the meat of the Alentejano X Duroc pig (the Alentejano is an indigenous Portuguese breed) are highly unsaturated. Some studies have highlighted the potential of using essential oils (EOs) in meat preservation to slow down auto-oxidation phenomena during storage in meat products (Turgut et al. 2016, Zhang et al., 2016).

Extensive work is being conducted to study the effect of clove EO, in preserving this meat. Commercial cuts of meat (secretos), obtained from the *Latissimus dorsi muscle* of this cross breed, were used to evalute the antioxidant effect of OE. This study presents the results of microbiological analysis, shear strength, sensory evaluation, and color at 0 and 6 months of storage.

Methods:



Results

Microbiological analysis

		Mesophiles	Psychrotrophics	Moulds	Yeasts	Enterobacteriaceae
0	Control	7.36±0.96	7.32±0.98	2.18±1.81	4.74±1.50	6.16±0.86
6	Control	6.05±0.94 (a)	6.02±0.91 (a)	2.74±0.81	3.16±1.53	5.34±1.12 (a)
	Clover 50 ppm	4.94±0.32 (b)	4.87±0.69 (b)	3.33±0.86	3.32±0.73	3.34±0.87 (b)
	Clover 500 ppm	5.98±0.87 (a;b)	5.90±0.89 (a;b)	3.16±1.05	3.85±0.65	3.39±0.97 (b)

- Statistically significant differences were observed between the control and the treatment with 50ppm clove EO for total mesophilic microorganisms ($p=0.039$) and total Psychrotrophics ($p=0.043$);
- Mold and yeast content didn't seem to be affected by the clove oil coating application, since there weren't found statistical significative differences between them.
- Concerning enterobacteria, there are significant differences between the control and the two treatments with clove EO.

Texture analysis

		Raw	Cooked
		Mean±SD	Mean±SD
0	Control	53,113±14,555	31,034±8,289
6	Control	30,706±8,233	16,032±7,38
	50 ppm	33,607±7,733	25,482±3,332
	500 ppm	32,254±12,574	19,716±2,831

The application of the clove essential oil didn't seem to affect sheer force in different modalities

Color analysis

		Raw
		Mean±SD
0	Control	54.12±15.04
6	Control	50.89±8.45
	50 ppm	49.89±9.13
	500 ppm	47.76±10.25

The application of the clove essential oil didn't seem to affect color analysis in different modalities

Sensorial analysis

		Color intensity	Off Colors	Tenderness	Fibrosity	Succulence	Flavor intensity	Negative flavors	Overall perception
0	Control	66,805±13,119	0,943±3,903	49,971±2,634	9,265±5,539	66,176±12,399	64,576±12,399	3,0481±0,735	64,765±11,249
6	Control	54,198±20,453	1,224±3,977	50,429±11,243	24,759±24,161	65,341±16,105	67,211±16,457	23,156±9,376	67,501±14,363
	50 ppm	67,778±13,892	0±0	49,5±15,118	23,743±28,765	64,543±20,676	69,472±18,511	10,0066±4,857	63,257±18,524
	500 ppm	61,524±12,496	0±0	45,667±13,028	19,863±15,381	68,143±11,508	67,286±11,942	0±0	68,045±10,689

Regarding sensory analysis, the panel couldn't find differences between the different meat modalities, namely in flavours, which means that the tested clove edible coating concentration doesn't have a negative impact on this parameter in meat.

Conclusions

Considering all the results obtained in this study, the use of clove EO was able to effec: vely reduce microbial counts in meat. Therefore, its applica: ons can be considered in the future for meat preserva: on.

References:

1. Turgut et al., (2016). Effect of pomegranate peel extract on lipid and protein oxida=on in beef meatballs during refrigerated storage. Meat Science 116 (2016) 126-132;
2. Zhang et al., (2016). Effect of black pepper essential oil on the quality of fresh pork during storage. Meat Science 117, 130-136;
3. Caine et al. (2003). Relationship of texture profile analysis and Warner-Bratzler shear force with sensory characteristics of beef rib steaks. Meat Science, 64(4), 333–339;
4. Laranjo et al. (2022). Essential oils of aromatic and medicinal plants play a role in food safety. J Food Proc Preserv 46, e14278;

Acknowlegments

Work supported by the ICAPP project (POCI-01-0247-FEDER-072109), co-financed by FEDER through Compete 2020.

- ✓ Feira Sagalexpo_Lisboa:
    - Cidade/País: Lisboa – Portugal
    - Datas de realização: 27, 28 e 29 de março de 2023
    - Participantes: Armazéns de Mercearia e Avícola Marvanejo Lda., e Terrius Food & Tourism, Lda.,

- ✓ Feira Meat Attraction Madrid:
    - Cidade/País: Madrid – Espanha
    - Datas de realização: 6, 7 e 8 marco 2023
    - Participantes: Armazéns de Mercearia e Avícola Marvanejo, Lda.,

- ✓ Feira Lisbon Food Affair:
    - Cidade/País: Lisboa – Portugal
    - Datas de realização: 12 e 14 fevereiro de 2023
    - Participante: Salsicharia Estremocense S.A.,

- ✓ Workshop_ S4Agro:
    - Cidade/País: Évora – Portugal
    - Data de realização: 14 fevereiro de 2023
    - Participantes: Universidade de Évora e Q-Staff - Consultoria Lda.,

- ✓ Workshop Inovação em Carnes de Porco Preto:
    - Cidade/País: Évora - Portugal
    - Data de realização: 14 fevereiro 2023
    - Participantes: Universidade de Évora, Q-Staff - Consultoria Lda., e Mendes & Gonçalves S.A., Armazéns de Mercearia e Avícola Marvanejo Lda., e Terrius Food & Tourism, Lda. e Salsicharia Estremocense S.A.,

- ✓ Workshop_GO_Cachena:
  - Cidade/País: Évora - Portugal
  - Data de Realização: 14 fevereiro 2023
  - Participante: Universidade de Évora

Projecto ICAPP - Investigação em Carnes Alentejanas de Porco Preto

Workshop de Apresentação de Resultados

14-02-2023

Inovação em carne de "Porco Preto"

Local: PACT-Parque do Alentejo de Ciência e Tecnologia
R. Luís Adelino Fonseca, 7005-345 Évora

PROGRAMA

11h15' - Apresentação do projecto (*Miguel Elias*, Universidade de Évora-MED|CHANGE)

11h30' - Conservação de carne de "Porco Preto" sob temperaturas de congelação (*Patrícia Soares*, Q-Staff)

11h45' - Conservas e semi-conservas de "Porco Preto" (*Diogo Figueira*, Mendes Gonçalves)

12h00' - Palestra "Carne Maturada: desafios actuais e perspectivas futuras" (*Teresa Matos*, Instituto Superior de Agronomia-Universidade de Lisboa)

12:30 - Discussão (15 minutos)

12h45' - Almoço

Para mais informações, visite:
https://www.uevora.pt/investigar/projetos?id=4456

Inscrições por email para:
elias@uevora.pt

Cofinanciado por:

COMPETE 2020 PORTUGAL 2020 UNIÃO EUROPEIA Fundo Europeu de Desenvolvimento Regional

Os eventos foram realizados ao abrigo do Projeto **ICAPP – Investigação em Carnes Alentejanas de Porco Preto**, cofinanciado pelo Fundo Europeu de Desenvolvimento Regional (FEDER), através do Programa Operacional Competitividade e Internacionalização - PORTUGAL2020".

Cofinanciado por:

COMPETE 2020 PORTUGAL 2020 UNIÃO EUROPEIA Fundo Europeu de Desenvolvimento Regional