



Decree of the Rector n. 1189 of 17/11/2023
Competition for awarding 1 research grant at the University of Udine

DISCLAIMER:

The official and legally binding call for applications is in Italian only. This document cannot be used for legal purposes and is only meant to provide information in English on the call for applications (Decree of the Rector n. 1189 of 17/11/2023). Please refer to the official call published on: <https://www.uniud.it/it/albo-ufficiale>

Any change and integration will be made available on the above mentioned web page. Therefore, no personal written communication regarding the examination date and/or competition results shall be provided to applicants.

Annex 1

Competition announcement for the assignment of 1 research grant at the University of Udine, entitled "Use of vegetable extracts and selected starters to improve the quality of meat" SSD: AGR/16 (principal investigator, Giuseppe Comi)

Art. 1

A selection procedure is hereby launched for the award of 1 research grant at the University of Udine, as identified in Attachment A which constitutes an integral part of the present announcement.

The research grant is linked to the research project and is subject and conditioned upon the relative funding.

The fellowship may be renewed, in compliance with Art. 22, Law No. 240 of 30 December 2010 (as in the text in force before the implementation of the Conversion Law of the D.L. 36/2022, L. 79/2022), Law No. 11 of 27 February 2015, and the current regulations of the University of Udine for awarding research grants, issued with the Rector's Decree No. 182 of 31 March 2021. The renewal is subject to the scientific coordinator's positive assessment of the researcher's activities, an adequate scientific rationale, and a corresponding financial covering.

The research fellowship does not give rise to any right with regards to accessing University posts.

Any personal communication to candidates related to this selection will be sent exclusively to the email address indicated when registering for the selection, as mentioned in Art. 5.

Art. 2

The research grant described in this competition announcement and the required qualifications to apply for the position are identified in Attachment A. The lack of the admission requirements leads to the automatic exclusion from the competition procedure.

Possession of a PhD or equivalent degree obtained abroad or, only for the interested areas, of a medical specialization accompanied by an adequate scientific production, constitutes a preferential qualification for awarding the research fellowship of this selection, if it has not been provided as a mandatory requirement.

For the only purpose of the admission to the competition, the Examining Board (Art. 7) shall assess the equivalence of the qualification obtained abroad, except for the evaluation of the medical specialization



qualification to which Article 38 of the Legislative Decree 165/2001 and subsequent modifications and additions, and EU regulations on the matter, shall be applied.

The Examining Board will proceed to the evaluation of the qualification obtained abroad according to the documentation attached to the application form. The Examining Board may exclude the candidate if the submitted documentation does not provide sufficient information for the assessment.

Therefore, applicants must enclose all the documentation in their possession relating to their qualification in order to provide the Examining Board with sufficient information for assessment.

Candidates holding a qualification issued by a **European Research Area country**, if successful, must submit, if not already attached to the application form one of the following options:

- Supplement Diploma in English issued by the competent University.
- CIMEA Certificate of comparability of the foreign qualification, issued by CIMEA (Information Centre on Academic Mobility and Equivalence) via the "diplome" service at <https://cimea.diplo-me.eu/udine/#/auth/login>

Candidates holding a qualification issued by a **non-European Research Area country**, if successful, must submit, if not already attached to the application form one of the following options:

- Declaration of the on-site value of the qualification and the certificate relating to the degree with examinations and grades. A certificate in a language other than Italian or English must be accompanied by an official translation into one of these languages (certified by the competent diplomatic-consular authority or certified by a court in Italy).
- CIMEA Certificate of comparability of the foreign qualification, issued by CIMEA (Information Centre on Academic Mobility and Equivalence) via the "diplome" service at <https://cimea.diplo-me.eu/udine/#/auth/login>

If the Supplement Diploma or the statement/attestation of comparability are not available when signing the contract, the applicant must demonstrate that he/she has requested the documentation and submit it as soon as possible.

Any exclusion from the selection procedure due to lack of eligibility requirements, absence of required documents, failure to sign the selection application or submission of the selection application in a manner different from what is provided for in this call for applications will be communicated to applicants exclusively at the email address indicated in the application form.

Art. 3

The research grant referred to in this call for applications cannot be awarded:

- a. to employees of Universities and the entities referred to in Article 22, section 1, of Italian Law no. 240 of 30 December 2010 (in the text prior to the reform introduced by Law no. 79 of 29 June 2022);
- b. to those who have already been awarded research grants pursuant to Italian Law no. 240 of 30 December 2010 (prior to the reform introduced by Law no. 79 of 29 June 2022) for the maximum period provided by law, even if not continuously, excluding the period in which the grant was used in conjunction with the doctorate, up to the legal term of the relative course;
- c. to those who have already benefited from research grants and fixed-term researcher contracts provided for, respectively, in Articles 22 and 24 of Italian Law no. 240 of 30 December 2010 (in the text prior to the reform introduced by Law no. 79 of 29 June 2022), for a total of 12 years, even if not consecutive;
- d. to anyone who has a degree of kinship or affinity, up to and including the fourth degree, with:
 - the Rector, the Director General or a member of the Board of Directors of the University of Udine;



- the scientific supervisor or a professor/researcher belonging to the department or organisation hosting the research grant in question.

The research grant provided for in this call for applications cannot be combined:

- a) with scholarships of any kind, except for those granted by Italian or foreign institutions to supplement, by means of stays abroad, the fellow's training or research activities;
- b) with other research grants;
- c) with an employment relationship, even if part-time, without prejudice to the relevant provisions for employees of public administrations.

The grant awarded under this call for applications is also incompatible with simultaneous attendance at university degree courses, either Bachelor's degree or Master's degree courses, research Doctorates with scholarships and medical specializations, in Italy or abroad.

Art. 4

Applicants must enclose with their application, under penalty of exclusion, the following documents:

- a) their professional scientific CV, highlighting the candidate's aptitude for carrying out and implementing the research project (Attachment A);
- b) their identity card, their passport or any other identification document¹;
- c) (for candidates with a foreign qualification only) certification or self-certification of both the academic qualification required for the admission to the selection, and of the exams (with evaluation) took during the period of study abroad, and of any other document that can be useful to the evaluation of the degree by the Examining Board.

Applicants can attach to the application, publications and any other certification considered useful to demonstrate the qualification based on the research program (Attachment A) and to certify any research activity accomplished at public or private institutes (indicating the starting and ending date and the duration).

The documents and qualifications mentioned above must be submitted in Italian or English. Those that are not as requested will not be evaluated. Documents originally written in a language other than Italian or English must come with a translation in Italian or English, that the candidate will do on its own responsibility. The translation can be an abstract concerning the thesis.

Italian and Community candidates wishing to submit qualifications referring to conditions and facts attested by Public Administrations must proceed exclusively with self-certification.

Non-EU citizens legally residing in Italy may self-certify only data that can be verified or certified by Italian public bodies. They may also use declarations in lieu when provided for by an international convention between Italy and the declarant's country of origin.

Non-EU citizens not residing in Italy cannot self-certify.

Only the qualifications possessed by the candidate on the date the application form is submitted and submitted in accordance with the procedures set out in Article 5 will be assessed.

Failure to submit mandatory documents provided for in this article will constitute grounds for exclusion from the selection.

¹ Please be aware that the residence permit is not an identification document.



Art. 5

The submission of the applications for the present call starts on November 23, 2023 at 2:00 pm (Italian time) and ends on January 18, 2024 at 2:00 pm (Italian time).

The application to take part in the selection must be completed, under penalty of exclusion, using the appropriate online procedure, available at the link <https://pica.cineca.it/>. The procedure involves an applicant registration step, for those who do not already have an account, and then an application completion step.

Once completed, the online application must be signed in the manner described in the online procedure (manual signature with attached identity document or digital signature), under penalty of exclusion from selection. The application does not have to be signed if you access the above-mentioned online procedure using your SPID ID.

The qualifications referred to in Article 4 must be attached to the application in .pdf format. Individual .pdf files may not exceed 30MB.

The application for participation in the selection is automatically sent to the University of Udine with the definitive closing of the online procedure.

The University Administration:

- is not responsible if it is impossible to read the submitted documentation in electronic format due to damaged files;
- shall not accept or take into consideration qualifications or documents received in paper form or by any means other than what is specified in this article.

Reference to documents or publications already submitted in connection with other competitions is not allowed.

The Administration is not responsible for any missing document or communication because of inaccurate indication of residence and/or address submitted by the candidate during the application. Also, the Administration is not responsible if the candidate has not communicated changes in this information, or has communicated them too late. The Administration is also not responsible for any postal or telegraphic problems not attributable to the Administration itself.

Applicants are advised not to wait until the last few days before the closing date to submit their application. The University accepts no responsibility for any malfunctions due to technical problems and/or overloading of the communication line and/or application systems.

Art. 6

The selection procedure is held in accordance with the modality indicated in Attachment A.

The test will aim to assess the general preparation, experience and aptitude for research of the candidate. It will consist in the evaluation of the professional scientific curriculum, of the publications and qualifications presented, and of the interview, where foreseen.

Art. 7

The Examining board for the competition is identified in Attachment A of the present competition announcement, of which it is an integral part.



At its first meeting, the Examining board shall appoint its President and Secretary, and establish the criteria and methods for evaluating the qualifications and the interview, where foreseen.

The results of the qualifications assessment must be disclosed to applicants during the interview, where foreseen.

The Examining board can award a maximum of 100 points (one hundred out of one hundred) to the selection.

At the end of the evaluation procedure, the Examining board shall formulate the general merit list based on the overall score of each candidate, and draw up the minutes of the whole competition procedure.

Based on the ranking list, the assignment is awarded to candidates who have obtained a minimum overall score of 70/100 (seventy out of one hundred).

The Examining board's judgement is final.

The ranking list will be made public exclusively through publication on the University's official website.

Applicants will not be notified of the outcome of the evaluation.

Those who do not declare their acceptance of the research grant and do not present themselves at the research centre within the deadline communicated by the latter, even if not formally, shall lose the right to receive it. Exceptions to this term will only be granted in cases of documented force majeure.

Art. 8

The research activity cannot be started before signing the contract defining the terms and conditions of the collaboration.

The activity covered by the research grant must have the following characteristics:

- a) it must be carried out as part of the research programme covered by the grant and not be a merely technical support to it;
- b) it must have a close connection with the realization of the research program for which the winner of the grant has been awarded the contract;
- c) it must be continuous and, in any case, temporally defined, not merely occasional, and in coordination with the overall activity of the University;
- d) it must be carried out autonomously, solely within the limits of the programme prepared by the programme supervisor, without predetermined working hours.

The researcher is required to submit a detailed written report on the work carried out and the results achieved, accompanied by the opinion of the scientific supervisor, to the reference organisation at the intervals set out in the contract. The researcher must also submit interim reports and timesheets, if requested by the reference organisation.

Either the fellow or the reference organisation may withdraw from the contract.

The reference organisation may terminate the contract not only in the cases referred to in Article 9, sections 2 and 3, of the "Internal rules for awarding research grants pursuant to law 240 of 30 December 2010" of the University of Udine, but also in the event the research project and therefore the financial coverage on which the research grant is based cease to exist.



Art. 9

The following legal dispositions shall apply to the grant referred to in this call for applications:

- for tax matters, the provisions of Article 4 of Italian Law no. 476 of 13 August 1984, as subsequently amended and supplemented;
- for social security matters, the provisions of Article 2(26) *et seq.* of Italian Law no. 335 of 8 August 1995, as subsequently amended and supplemented;
- for mandatory maternity leave, the provisions of the Italian Ministerial Decree of 12 July 2007;
- with regard to sick leave, the provisions of Article 1(788) of Italian Law no. 296 of 27 December 2006 and subsequent amendments.

During the period of mandatory maternity leave, the allowance paid by INPS according to Art. 5 of the Italian Ministerial Decree of 12 July 2007 is supplemented by the University up to the full amount of the research grant.

The grant will be paid in monthly instalments.

Art. 10

The data collected as part of the procedure referred to in Art. 5 are necessary to properly manage the selection procedure, for any subsequent management of the research grant and for purposes related to managing services provided by the University. The University of Udine is the Data Controller. At any time, the data subject may request access, rectification and, depending on the University's institutional purposes, cancellation and restriction of processing or oppose the processing of their data. The data subject can always lodge a complaint with the Italian Data Protection Authority. The complete disclosure is available on the University of Udine website in the "Privacy" section, accessible from the home page www.uniud.it Direct Link: <https://www.uniud.it/it/it/pagine-speciali/quida/privacy>

Art. 11

For all matters not expressly mentioned in this call for applications, refer to the regulations in force on the subject cited in the introduction and to the "Internal rules for awarding research grants pursuant to Italian Law no. 240 of 30 December 2010" of the University of Udine, issued by Rector's Decree no. 182 of 31 March 2021.

Art. 12

The procedure supervisor is Dr Sandra Salvador, Head of the Research Services Area of the University of Udine.

The Responsible office at the University of Udine is "Area Servizi per la Ricerca - Ufficio Formazione per la Ricerca", via Mantica n. 31 - 33100 Udine, Italia.

To request information about the call for applications, please complete the following form available on the University of Udine website:

https://helpdesk.uniud.it/SubmitSR.jsp?type=req&accountId=universityofudine&populateSR_id=42105



Attachment A

Responsabile scientifico della ricerca / Principal investigator:

Nome e cognome / Name and surname: Giuseppe Comi
Qualifica / Position: Professore Ordinario / Full Professor
Dipartimento / Department: Scienze agroalimentari, ambientali e animali / Agricultural, Food, Environmental and Animal Sciences
Area MIUR / Research field: 07 - Scienze agrarie e veterinarie
Settore concorsuale e Settore scientifico disciplinare / Scientific sector: 07/I1 - AGR/16 (Microbiologia agraria)

Titolo dell'assegno di ricerca / Topic of the research fellowship "assegno di ricerca":

I bandi sono consultabili dal sito dell'Ateneo, del MUR e di Euraxess / The calls are available on the University, MUR and Euraxess websites

Testo in italiano:

Impiego di estratti vegetali e starter selezionati per migliorare la qualità della carne.

Text in English:

Use of vegetable extracts and selected starters to improve the quality of meat.

Obiettivi previsti e risultati attesi del programma di ricerca in cui si colloca l'attività dell'assegnista di ricerca / Foreseen objectives and results of the research programme performed by the research fellow "assegnista di ricerca":

I bandi sono consultabili dal sito dell'Ateneo, del MUR e di Euraxess / The calls are available on the University, MUR and Euraxess websites

Testo in italiano:

Abstract del progetto	Il cambiamento climatico e lo sviluppo sostenibile richiedono un'organizzazione innovativa del sistema alimentare, che promuova condizioni sane e rispettose dell'ambiente. Salumi, più di altre preparazioni, richiedono innovazioni radicali. Il progetto mira a promuovere il passaggio a sistemi resilienti di prodotti a base di carne, consapevoli delle interrelazioni tra salute umana e dell'ecosistema, catene di approvvigionamento, sostenibilità e riduzione degli sprechi alimentari. In particolare, verrà valutata l'effetto antiossidante e l'attività antimicrobica di molecole o estratti di sottoprodotti di vegetali nei confronti di microrganismi patogeni e alteranti. Tali sottoprodotti saranno impiegati in associazione con starter microbici selezionati per la produzione di insaccati stagionati. Il loro utilizzo permetterà la riduzione dell'impiego di additivi (es. nitriti e nitrati), e migliorerà le caratteristiche igienico-sanitarie e sensoriali di tali prodotti.
Obiettivi del progetto	Il progetto permetterà di: - Utilizzare sottoprodotti di vegetali (SV); - Caratterizzare l'attività biologica dei SV valutando la loro attività antimicrobica; - Selezionare di colture microbiche multifunzionali (protettive, aromatizzanti e salutari) compatibili con l'uso dei SV; - Valutare l'efficacia dei SV e delle colture microbiche multifunzionali nelle produzioni innovative di salami fermentati; - Valutare l'incremento della qualità igienico-sanitaria e sensoriale grazie



	all'impiego di SV e starter selezionati.
Stato dell'arte	<p>Nell'ultimo decennio è stata prestata grande attenzione alla sostenibilità dei prodotti a base di carne [1]. Tale sostenibilità ha suggerito la necessità di sostituire additivi e conservanti di sintesi con molecole derivanti da sottoprodotti o da estratti vegetali, in maniera da creare prodotti a base di carne alternative [2,3]. Gli estratti vegetali naturali in sostituzione agli additivi tradizionali stanno via via prendendo sempre più piede nei mercati globali. Diversi studi hanno indagato i loro effetti di mitigazione sull'ambiente e sulla salute pubblica associati ai tradizionali prodotti a base di carne [4].</p> <p>Il recupero di sostanze alternative potrebbe fornire benefici sulla salute umana [4-7] oltre che all'ambiente e in termini di riduzione degli sprechi, soprattutto se si considera che questi sottoprodotti potrebbero avere un grande impatto se dispersi nell'ambiente [8]. Pertanto, il miglioramento della sostenibilità nei prodotti a base di carne suina potrebbe rappresentare una reale opportunità nel campo della transizione ecologica. Questa consapevolezza assume maggiore forza alla luce della comunicazione della Commissione europea che definisce il Green Deal europeo (EGD) che introduce l'ambiziosa strategia per trasformare i sistemi alimentari europei in uno standard globale per la sostenibilità [9]. L'ambiente e la riduzione degli sprechi alimentari rappresentano il tema principale di questa transizione. La capacità di resilienza verde e l'interazione sostenibile con altre filiere possiedono i requisiti per la compatibilità dei prodotti alimentari con l'era del green deal. Per attuare la transizione verso sistemi resilienti dei prodotti a base di carne, sono necessarie innovazioni radicali devono comprendere i) le interrelazioni tra la salute umana e l'ecosistema e ii) l'urgenza della riduzione dello spreco alimentare coinvolgendo anche altre filiere.</p> <p>Sulla base di queste considerazioni, la nuova sfida per i salumi è la capacità di adattare il processo tecnologico alle attuali esigenze green, consentendo il riutilizzo degli scarti agroindustriali come fonti di nutrienti, antiossidanti, proteine, e composti benefici, come peptidi bioattivi o salutari metaboliti [10-12].</p>
Descrizione del progetto	<p>Molecole o estratti vegetali saranno testati per le loro caratteristiche bioattive, come specificato di seguito.</p> <p>Attività antimicrobica: un'ampia gamma di batteri Gram positivi e Gram negativi, inclusi agenti patogeni (<i>Listeria monocytogenes</i>, <i>Staphylococcus aureus</i>, <i>Salmonella</i> spp., <i>Escherichia coli</i>) nonché batteri deterioranti (<i>Pseudomonas</i> spp.; <i>Brochothrix thermosphacta</i>) e muffe (<i>Penicillium</i> spp., <i>Mucor</i> spp., <i>Aspergillus</i> spp.) saranno utilizzati per accertare l'attività antimicrobica di tali estratti. Per ogni microrganismo sarà definita la concentrazione minima inibitoria e microbica.</p> <p>Saranno selezionate colture microbiche in grado di influenzare positivamente le caratteristiche di prodotti a base di carne innovativi. Gli obiettivi specifici comprenderanno:</p> <ol style="list-style-type: none">1. Selezione di colture protettive per garantire un'elevata sicurezza;2. Individuazione di ceppi in grado di potenziare le caratteristiche sensoriali;3. Selezione di colture microbiche benefiche per la salute. <p>Le strategie di screening innovative saranno eseguite come segue. Verrà</p>



	<p>utilizzato un approccio di screening per selezionare i ceppi protettivi più efficaci di quelli finora disponibili, caratterizzati principalmente dalla produzione di batteriocine. Saranno valutati LAB (Batteri Lattici) e CNC (Cocchi Coagulasi Negativi) da salsicce fermentate e salumi. Verrà inoltre accertata la relazione con ceppi abitualmente utilizzati come starter.</p> <p>Screening primario: almeno 50 ceppi selezionati tra LAB e CNC provenienti da salumi saranno valutati per la loro attività contro specie microbiche sia patogene che deterioranti.</p> <p>Screening secondario: verrà studiata la compatibilità di tali ceppi in prodotti a base di carne e sarà valutata l'interazione tra questi e i ceppi solitamente usati come colture starter acidificanti o aromatizzanti, nonché l'interazione con gli estratti.</p> <p>Dei 50 ceppi (LAB e CNC) testati saranno presi in considerazione quelli con attività lipolitica e proteolitica. Screening primario: la capacità di idrolizzare proteine (sarcoplasmatiche e miofibrillari) e trigliceridi. Screening secondario: verranno studiate le interazioni che intercorrono tra ceppi aromatizzanti, lipolitici e proteolitici e verrà descritta la relazione tra interazioni microbiche e caratteristiche tecnologiche.</p> <p>I ceppi selezionati verranno testati in associazione come starter microbici per la produzione di salami fermentati. A tal proposito saranno prodotti salami (almeno 3 lotti) addizionati di starter e confrontati con salami ottenuti con lo stesso starter e addizionati di estratti vegetali.</p> <p>Verranno eseguite analisi chimico-fisiche e microbiologiche in campioni di ciascun lotto durante la maturazione e l'intera shelf-life. Queste comprenderanno la valutazione del pH, dell'Aw, dell'umidità, dell'azoto totale, della componente aromatica volatile (tramite GC/MS).</p> <p>Verrà ricercata la presenza di microrganismi patogeni, ai fini di valutare l'effetto degli starter e degli estratti vegetali nei loro confronti.</p> <p>Le due tipologie di salumi (starter selezionati + molecole antiossidanti versus starter selezionati) saranno valutate attraverso indagini sensoriali per definire l'efficacia degli starter e degli estratti aggiunti.</p> <p>Tutte le metodiche utilizzate sono riportate nei lavori citati in bibliografia (13-16).</p>
<p>Possibili applicative potenzialità</p>	<p>Avanzamento della conoscenza:</p> <ol style="list-style-type: none"> 1. Gli estratti vegetali (SV) saranno catalogati in base all'idoneità del loro riutilizzo in prodotti a base di carne. Ciò consentirà un cambiamento radicale nella gestione dei sottoprodotti vegetali. 2. Miglioramento dei criteri di selezione microbica per regolare le attività microbiche al fine di garantire l'efficienza dei processi sostenibili, la qualità e la sicurezza dei salumi. 3. Ricerca di Indicatori di sostenibilità, di salubrità e sicurezza dei salumi allo zero spreco della filiera dei vegetali, assicurando una posizione di vertice nella classifica di sostenibilità per i prodotti a base di carne innovativi. <p>Divulgazione dei risultati. Verrà adottato un piano specifico per aumentare la visibilità del progetto svolgendo attività di divulgazione durante l'intera durata del progetto e verrà prestata particolare attenzione a specifici stakeholder e alla produzione di pubblicazioni a livello nazionale e internazionale.</p>



Bibliografia	<ol style="list-style-type: none">1. Barlow, J., Lennox, G. D., Ferreira, J., Berenguer, E., Lees, A. C., Mac Nally, R., et al. (2016). Anthropogenic disturbance in tropical forests can double biodiversity loss from deforestation. <i>Nature</i> 535, 144–147. doi: 10.1038/nature18326.2. Springmann, M., Mason-D’Croz, D., Robinson, S., Wiebe, K., Godfray, H. C. J., et al. (2018). Health-motivated taxes on red and processed meat: a modelling study on optimal tax levels and associated health impacts. <i>PLoS ONE</i> 13:e0204139.3. Schiermeier, Q. (2019). Eat less meat: UN climate-change report calls for change to human diet. <i>Nature</i>, 572(7769), 291-292.4. Eshel, G., Stainier, P., Shepon, A., & Swaminathan, A. (2019). Environmentally optimal, nutritionally sound, protein and energy conserving plant-based alternatives to US meat. <i>Scientific reports</i>, 9(1), 1-11.5. Carrero, J. J., González-Ortiz, A., Avesani, C. M., Bakker, S. J., Bellizzi, V., Chauveau, P., Fouque, D. (2020). Plant-based diets to manage the risks and complications of chronic kidney disease. <i>Nature Reviews Nephrology</i>, 16(9), 525-542.6. Emin Burçin Özvural, Halil Vural. Grape seed flour is a viable ingredient to improve the nutritional profile and reduce lipid oxidation of frankfurters. <i>Meat Science</i> 88 (2011) 179–183.7. Mireles-Arriaga, A. I., Ruiz-Nieto, J. E., Juárez-Abraham, M. R., Mendoza-Carrillo, M., & Martínez-Loperena, R. (2017). Functional restructured meat: Applications of ingredients derived from plants. <i>Vitae</i>, 24(3), 196-204.8. Manca, M. L., Casula, E., Marongiu, F., Bacchetta, G., Sarais, G., Zaru, M., & Manconi, M. (2020). From waste to health: Sustainable exploitation of grape pomace seed extract to manufacture antioxidant, regenerative and prebiotic nanovesicles within circular economy. <i>Scientific Reports</i>, 10(1), 1-14.9. Haines, A., & Scheelbeek, P. (2020). European Green Deal: a major opportunity for health improvement. <i>The Lancet</i>, 395(10233), 1327-13.10. Allan, S. J., De Bank, P. A., & Ellis, M. J. (2019). Bioprocess design considerations for cultured meat production with a focus on the expansion bioreactor. <i>Frontiers in Sustainable Food Systems</i>, 3, 44.11. Aquilani, C., Sirtori, F., Flores, M., Bozzi, R., Lebret, B., & Pugliese, C. (2018). Effect of natural antioxidants from grape seed and chestnut in combination with hydroxytyrosol, as sodium nitrite substitutes in Cinta Senese dry-fermented sausages. <i>Meat science</i>, 145, 389-398.12. Aminzare, M., Hashemi, M., Ansarian, E., Bimkar, M., Azar, H. H., Mehrasbi, M. R., Afshari, A. (2019). Using natural antioxidants in meat and meat products as preservatives: a review. <i>Advances in Animal and Veterinary Sciences</i>, 7(5), 417-426.13. Comi, G., Iacumin, L. (2013) Microbial spoilage of traditional dry sausages produced in small-scale facilities in Friuli, a northeastern region of Italy. <i>Acta Alimentaria</i>, Vol. 42 (3), 390-399.14. Iacumin, L., Manzano, M., Panseri, S., Chiesa, L., Comi, G. (2016) A new case of spoilage in goose sausages. <i>Food Microbiology</i>, 58, 56-62.15. Iacumin, L., Manzano, M., Stella, S., Comi, G. (2017) Fate of the microbial population and the physico-chemical parameters of “Sanganel” a typical blood sausages of the Friuli, a north-east region of Italy. <i>Food Microbiology</i>, 63, 84-91.16. Iacumin, L., Osualdini, M., Bovolenta, S., Boscolo, D., Chiesa, L., Panseri, S. Comi, G. (2020) Microbial, chemico-physical and volatile aromatic compounds characterization of Pitina PGI, a peculiar sausage-like product of North East Italy. <i>Meat Science</i> 163, Article number 108081.
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Text in English:

Abstract	Climate change and sustainable development require an innovative organization of the food system, which promotes healthy and environmentally friendly conditions. Cured meats, more than other products, require radical innovations. The project aims to promote the transition to resilient systems of meat products, aware of the interrelationships between human and ecosystem health, supply chains, sustainability and food waste reduction. In particular, the antioxidant effect and the antimicrobial activity of molecules or by-product extracts of the wine industry will be evaluated against pathogenic and spoilage microorganisms. These by-products will be used in association with selected microbial starters for the ripening of cured sausages. Their use will allow the reduction of the use of additives (e.g., nitrites and nitrates), and will improve the hygienic-sanitary and sensorial characteristics of these products.
Objectives of the project	The project will allow to: <ul style="list-style-type: none"> - Select by-products of vegetables production (SV); - Characterize the biological activity of SVs by evaluating their antimicrobial activity; - Select multifunctional microbial cultures (protective, flavoring and healthy) compatible with the use of SVs; - Evaluate the efficacy of SVs and multifunctional microbial cultures in the innovative production of fermented salami; - Evaluate the increase in hygienic-sanitary and sensorial quality thanks to the use of SV and selected starters.
State of the art	In the last decade, great attention has been paid to the sustainability of meat products [1]. This sustainability has suggested the need to replace synthetic additives and preservatives with molecules deriving from by-products or plant extracts, in order to create alternative meat products [2,3]. Natural plant substitutes to replace traditional additives are gradually gaining ground in global markets. Several studies have investigated their environmental and public health mitigating effects associated with traditional meat products [4]. The recovery of alternative substances could provide benefits on human health [4-7] as well as on the environment and in terms of waste reduction, especially if we consider that these by-products could have a large impact if dispersed into the environment [8]. Therefore, the improvement of sustainability in pork products could represent a real opportunity in the field of ecological transition. This awareness takes on greater strength in the light of the European Commission communication defining the European Green Deal (EGD) which introduces the ambitious strategy to transform European food systems into a global standard for sustainability [9]. The environment and the reduction of food waste are the main themes of this transition. Green resilience capacity and sustainable interaction with other supply chains possess the requisites for the compatibility of food products with the green deal era. Furthermore, legislative actions are essential to promote sustainable food consumption. To implement the transition towards resilient systems of meat products, radical innovations are needed and they must be aware of i) the interrelationships between human and ecosystem health and ii) the urgency of reducing food waste also involving other supply chains. Based on these considerations, the



	<p>new challenge for cured meats is the ability to adapt the technological process to current green needs, allowing the reuse of agro-industrial waste as sources of nutrients, including proteins, and beneficial compounds, such as bioactive peptides or healthy metabolites [10-12].</p>
<p>Project description</p>	<p>Molecules or plant extracts by-products of vegetables will be tested for their bioactive characteristics, as specified below. Antimicrobial activity: A broad range of Gram positive and Gram negative bacteria, including pathogens (<i>Listeria monocytogenes</i>, <i>Staphylococcus aureus</i>, <i>Salmonella</i> spp., <i>Escherichia coli</i>) as well as spoilage bacteria (<i>Pseudomonas</i> spp.; <i>Brochothrix thermosphacta</i>) and molds (<i>Penicillium</i> spp., <i>Mucor</i> spp., <i>Aspergillus</i> spp.) will be used to ascertain the antimicrobial activity of these extracts. For each microorganism the minimum inhibitory and microbicidal concentration will be defined. Microbial cultures able to positively influence the characteristics of innovative meat products will be selected. Specific objectives:</p> <ol style="list-style-type: none"> 1. Selection of protective crops to ensure high safety; 2. Identification of strains able to enhance the sensory characteristics; 3. Selection of microbial cultures beneficial to health. <p>Innovative screening strategies will be performed as follows. A screening approach will be used to select the most effective protective strains of those available so far, mainly characterized by the production of bacteriocins. LAB (Lactic Bacteria) and CNC (Coagulase Negative Cocci) will be evaluated from fermented sausages and cold cuts. The relationship with strains usually used as starters will also be ascertained. Primary screening: at least 50 strains selected between LAB and CNC from cured meats will be evaluated for their activity against both pathogenic and spoilage microbial species. Secondary screening: the compatibility of non-bacteriogenic antagonistic strains with meat products will be studied and the interaction between the protective strains and the strains usually used as acidifying or flavoring starter cultures will be evaluated, as well as the interaction with the extracts. Of the 50 strains (LAB and CNC) tested, those with lipolytic and proteolytic activity will be taken into consideration. Primary screening: the ability to hydrolyze proteins (sarcoplasmic and myofibrillar) and triglycerides. Secondary screening: the interactions between flavouring, lipolytic and proteolytic strains will be studied and the relationship between microbial interactions and technological characteristics will be described. The selected strains will be tested in association as microbial starters for the production of fermented salami. In this regard, salami will be produced (at least 3 lots) with added starter and compared with salami obtained with the same starter and added with vegetable extracts. Chemical-physical, microbiological analyzes will be performed. The chemical-physical and microbiological analyzes on samples of each lot during the entire shelf-life. These will include evaluation of pH, Aw, humidity, total nitrogen, volatile aromatic component (by GC/MS). The presence of pathogenic microorganisms will be searched for, in order to evaluate the effect of the starters and plant extracts. Also, in order to evaluate the growth of unwanted microorganisms. The two types of cured meats will be evaluated through sensory investigations to define the effectiveness of the starters and added extracts. All the methods are cited in the references (13-16).</p>



Possible application potentialities	<p>Advancement of knowledge:</p> <ol style="list-style-type: none"> 1. Plant extracts (SV) will be cataloged according to the suitability of their reuse in meat products. This will allow for a radical change in the management of winemaking by-products. 2. Improvement of microbial selection criteria to regulate microbial activities in order to ensure sustainable process efficiency, quality and safety of cured meats. 3. Authenticity and sustainability indicators make it possible to link the wholesomeness and safety value of cured meats to the zero waste of the wine supply chain, ensuring a top position in the sustainability ranking for innovative meat-based products. <p>Dissemination of Results. A specific plan will be adopted to increase the visibility of the project by carrying out dissemination activities during the entire duration of the project and particular attention will be paid to specific stakeholders and the production of publications at national and international level.</p>
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Struttura dell'Università di Udine presso la quale verrà sviluppata l'attività di ricerca / Department or other structure of the University of Udine where research activities will be carried out:

Dipartimento di Scienze Agroalimentari, Ambientali e Animali (DI4A) / Department of Agricultural, Food, Environmental and Animal Sciences

Importo dell'assegno di ricerca (al lordo oneri carico assegnista) / Total grant gross for the research fellowship:

€ 19.367,00

Durata dell'assegno di ricerca / Duration of the research fellowship "assegno di ricerca":

12 mesi / months

Finanziamento / Financed by:

La copertura finanziaria graverà sui fondi/progetto:

- Risorse d'Ateneo: bando interno finanziamento assegni 2023 (D.R. n. 406/2023);
- Fondo di ricerca libera del proponente, prof. Giuseppe Comi – codice U-GOV: RICLIB_COMI.

Requisiti di ammissione / Minimum qualifications necessary:

- Possesso di un diploma di laurea vecchio ordinamento (ante decreto 3 novembre 1999 n. 509) o di laurea specialistica/magistrale (ex decreto 3 novembre 1999 n. 509 e decreto 22 ottobre 2004 n. 270) o titolo equivalente conseguito all'estero;
- possesso di un curriculum scientifico professionale idoneo allo svolgimento dell'attività di ricerca contemplata.
- University degree obtained before Decree n. 509 of 3 November 1999 or specialistic/Master's degree (post decree n. 509 of 3 November 1999 and decree n. 270 of 22 October 2004) or equivalent degree obtained abroad;
- professional scientific curriculum suitable for the research activity above mentioned.



Procedura selettiva / Competition procedure:

Valutazione per titoli e colloquio / Evaluation of titles and oral exam

I risultati della valutazione dei titoli saranno resi noti agli interessati nel corso del colloquio / The evaluation of the qualifications will be disclosed to candidates during the interview

Calendario del colloquio / Calendar of the oral exam	Modalità / Modality	In presenza / On site
	Data / Date	20 febbraio / February 2024
	Ora / Time	9:30 / 9:30 am (Italian time)
	Luogo / Place	Sala della vite e del vino presso il Dipartimento di Scienze agroalimentari, ambientali e animali (DI4A) Via Sondrio, 2/a – 33100 Udine

Per sostenere il colloquio i candidati devono esibire un valido documento di riconoscimento. / Candidates must come to the interview with a valid identity document.

Eventuali variazioni saranno rese note esclusivamente mediante pubblicazione all'albo ufficiale on line dell'Ateneo / Any change will be made public solely through publication on the University web site http://web.uniud.it/ateneo/normativa/albo_ufficiale

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