

**Department of Food Science and Technology (MRSPTU, Bathinda) Research/ Other Collaborations**

Department	Academic Year	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Nature of the activity	Proof
Food Science and Technology	2021-22	Antioxidant, anti-cancer, and debittering potential of edible fungi ( <i>Aspergillus oryzae</i> ) for bioactive ingredient in personalized foods.	Dartment of Food Processing, Guru Nanak College, Budhlada, Punjab, India, Department of Biotechnology, Chaudhary Devi Lal University, Sirsa, India	Sukhvinder Singh Purewal, Pinderpal Kaur, Gagandeep Garg, <b>Kawaljit Singh Sandhu</b> , and Raj Kumar Salar.	2022	Research	YES
Food Science and Technology	2021-22	Indian rye ( <i>Secale cereale</i> ) cultivars: fiber profile, minerals content, physical-functional and biscuit making properties.	Department of Food Science and Technology, Guru Nanak Dev University, Amritsar, India	Pinderpal Kaur, <b>Kawaljit Singh Sandhu</b> , and Maninder Kaur	2022	Research	YES
Food Science and Technology	2021-22	A review of Sapodilla ( <i>Manilkara Zapota</i> ) in human nutrition, health, and industrial applications.	Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson 29634, USA , Food Customization Research Lab, Centre for Rural Development and Technology, Indian Institute of Technology Delhi, New Delhi, 110016, India , Department of Food Science and Technology, Guru Nanak Dev University, Amritsar, 143005, India, Department of Food Science, College of Agriculture and Veterinary Medicine, United Arab Emirates University, Al Ain, 15551, United Arab Emirates , Cukurova University, Faculty of Fisheries, Department of Seafood Processing Technology, 01330, Adana, Turkey	Sneh Punia Bangar, Nitya Sharma, Harpreet Kaur, Maninder Kaur, <b>Kawaljit Singh Sandhu</b> , Sajid Maqsood, and Fatih Ozogul	2022	Research	YES
Food Science and Technology	2021-22	Unraveling the effect of storage duration on antioxidant properties, physicochemical and sensorial parameters of ready to serve Kinnow-Amla beverages.	Department of Food Science and Technology, Guru Nanak Dev University, Amritsar, India Department of Biotechnology, Chaudhary Devi Lal University, Sirsa, India Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC 29634, USA Department of Food Science and Technology, Chaudhary Devi Lal University, Sirsa, India	Sukhvinder Singh Purewal, Rishav Kamboj, <b>Kawaljit Singh Sandhu</b> , Pinderpal Kaur, Kartik Sharma, Maninder Kaur, Raj Kumar Salar, Sneh Punia, and Anil Kumar Siroha	2022	Research	YES
Food Science and Technology	2021-22	Germinated Barley Cultivars: Effect on Physicochemical and Bioactive Properties.	Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson 29634, USA Centre for Innovative Process Engineering (CENTIV) GmbH, 28857 Syke, Germany CENCIRA Agrofood Research and Innovation Centre, Ion Meşter 6, 400650 Cluj-Napoca, Romania Centro Tecnológico de La Carne de Galicia, Adva.	Sneh Punia Bangar, <b>Kawaljit Singh Sandhu</b> , Monica Trif, Vishal Manjunatha, and Jose Manuel Lorenzo	2022	Research	YES

			Galicia nº 4, Parque Tecnológico de Galicia, San Cibrao das Viñas, 32900 Ourense, Spain Área de Tecnología de los Alimentos, Facultad de Ciencias de Ourense, Universidade de Vigo, 32004 Ourense, Spain				
Food Science and Technology	2021-22	Effect of processing on bioactive profile, minerals, and bitterness-causing compounds of Kinnow jam.	Department of Food Science & Technology, Chaudhary Devi Lal University, Sirsa, India	Sukhvinder Singh Purewal, <b>Kawaljit Singh Sandhu</b> , Pinderpal Kaur, and Sneha Punia	2022	Research	YES
Food Science and Technology	2021-22	The effect of mild and strong heat treatments on in vitro antioxidant properties of barley (Hordeum vulgare) cultivars	Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson 29634, USA Centre for Innovative Process Engineering (CENTIV) GmbH, 28857 Syke, Germany Centro Tecnológico de La Carne de Galicia, Adva. Galicia nº 4, Parque Tecnológico de Galicia, San Cibrao das Viñas, 32900 Ourense, Spain Área de Tecnología de los Alimentos, Facultad de Ciencias de Ourense, Universidad de Vigo, 32004 Ourense, Spain	Sneha Punia Bangar, <b>Kawaljit Singh Sandhu</b> , Monica Trif, and Jose Manuel Lorenzo	2022	Research	YES
Food Science and Technology	2021-22	Evaluating the Effects of Wheat Cultivar and Extrusion Processing on Nutritional, Health-Promoting, and Antioxidant Properties of Flour	Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC, United States, Life Science Institute, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Cluj-Napoca, Romania, Faculty of Animal Science and Biotechnology, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Cluj-Napoca, Romania, Centre for Innovative Process Engineering (CENTIV) GmbH, Syke, Germany	Sneha Punia Bangar, <b>Kawaljit Singh Sandhu</b> , Alexandru Rusu, Monica Trif, and Sukhvinder Singh Purewal	2022	Research	YES
Food Science and Technology	2021-22	Octenyl Succinic Anhydride Modified Pearl Millet Starches: An Approach for Development of Films/Coatings	Department of Food Science and Technology, Chaudhary Devi Lal University, Sirsa 125055, India Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC 29634, USA Centro Tecnológico de la Carne de Galicia, Adva. Galicia nº 4, Parque Tecnológico de Galicia, San Cibrao das Viñas, 32900 Ourense, Spain; Área de Tecnología de los Alimentos, Facultad de Ciencias de Ourense, Universidad de Vigo, 32004 Ourense, Spain CENCIRA Agrofood Research and Innovation Centre, 400650 Cluj-Napoca, Romania	Anil Kumar Siroha, Sneha Punia Bangar, <b>Kawaljit Singh Sandhu</b> , Jose Manuel Lorenzo, and Monica Trif.	2022	Research	YES
Food Science and Technology	2021-22	Mathematical modelling and characterization of starch nanocrystals synthesized from pearl millet varieties with different amylose content	Sant Longowal Institute of Engineering & Technology Longowal, Sangrur 148106, India	Mamta Bhardwaj, <b>Kawaljit Singh Sandhu</b> , and D.C. Saxena	2022	Research	YES

Food Science and Technology	2021-22	Nanocomposite Starch Films: A New Approach for Biodegradable Packaging Materials.	School of Bioengineering and Food Technology Shoolini University of Biotechnology and Management Sciences Solan, Himachal Pradesh 173229, India, Université Grenoble Alpes, CNRS, Grenoble INP, LGP2 Grenoble F-38000, France, Department of Food Science and Technology Guru Nanak Dev University Amritsar, Punjab 143005, India, Department of Food Science and Technology Chaudhary Devi Lal University Sirsa, Haryana 125055, India	Prafull Chavan, Archana Sinhmar, Somesh Sharma, Alain Dufresne, Rahul Thory, Maninder Kaur, <b>Kawaljit Singh Sandhu</b> , Manju Nehra, and Vikash Nain	2022	Research	YES
Food Science and Technology	2021-22	Development of Starch Nanoparticle From Mango Kernel in Comparison With Cereal, Tuber, and Legume Starch Nanoparticles: Characterization and Cytotoxicity	Department of Food Science and Technology Chaudhary Devi Lal University Sirsa 125055, India, Department of Food Science and Technology Guru Nanak Dev University Amritsar 143005, India, School of Bioengineering and Food Technology Shoolini University of Biotechnology and Management Sciences Bajhol, PO Sultanpur, Distt., Solan, HP 173229, India	Vikash Nain, Maninder Kaur, <b>Kawaljit Singh Sandhu</b> , Rahul Thory, and Archana Sinhmar	2022	Research	YES
Food Science and Technology	2021-22	Barnyard millet starch cross-linked at varying levels by sodium trimetaphosphate (STMP): Film forming, physico-chemical, pasting and thermal properties.	Department of Food Science and Technology, Chaudhary Devi Lal University, Sirsa, India Department of Food Science and Technology, Guru Nanak Dev University, Amritsar, India	Vinita Sharma, Maninder Kaur, <b>Kawaljit Singh Sandhu</b> , Shamandeep Kaur, and Manju Nehra	2021	Research	YES
Food Science and Technology	2021-22	Effect of degree of cross linking on physicochemical, rheological and morphological properties of Sorghum starch.	Department of Food Science and Technology, Chaudhary Devi Lal University, Sirsa, India	<b>Kawaljit Singh Sandhu</b> , Anil Kumar Siroha, Sneha Punia, Lalit Sangwan, Manju Nehra, and Sukhvinder Singh Purewal.	2021	Research	YES
Food Science and Technology	2021-22	Rye: A wonder crop with industrially important macromolecules and health benefits.	Department of Food Science and Technology, Guru Nanak Dev University, Amritsar, India National Centre for Integrated Pest Management, Pusa Campus, New Delhi, India	Pinderpal Kaur, <b>Kawaljit Singh Sandhu</b> , Sukhvinder Singh Purewal, Maninder Kaur, and Surender Kumar Singh	2021	Research	YES

Food Science and Technology	2021-22	Unraveling the Bioactive Profile, Antioxidant and DNA Damage Protection Potential of Rye ( <i>Secale cereale</i> ) Flour	<p>Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC 29634, USA</p> <p>Department of Food Science and Technology, Guru Nanak Dev University, Amritsar 143005, India; mandyvirk@rediffmail.com</p> <p>School of Chemical and Energy Engineering, Faculty of Engineering, Universiti Teknologi Malaysia (UTM), Johor Bahru 81310, Malaysia; ahmadilyas@utm.my</p> <p>Centre for Advanced Composite Materials (CACM), Universiti Teknologi Malaysia (UTM), Johor Bahru 81310, Malaysia</p> <p>Department of Aerospace Engineering, Faculty of Engineering, Universiti Putra Malaysia (UPM), Serdang 43400, Malaysia; asyrafz96@gmail.com</p> <p>Research Centre for Sustainability Science and Governance (SGK), Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM), Bangi 43600, Malaysia</p>	<p>Pinderpal Kaur, <b>Kawaljit Singh Sandhu</b>, Sneh Punia Bangar, Sukhvinder Singh Purewal, Maninder Kaur, and Rushdan Ahmad Ilyas, Muhammad Rizal Muhammad Asyraf, Muhammad Rizal Razman</p>	2021	Research	YES
Food Science and Technology	2021-22	Enrichment in different health components of barley flour using twin-screw extrusion technology to support nutritionally balanced diets.	<p>Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC, United States,</p> <p>Food Research Department, Centre for Innovative Process Engineering (CENTIV) GmbH, Syke, Germany,</p> <p>Department of Food Science, Life Science Institute, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Cluj-Napoca, Romania,</p> <p>Department of Exact Sciences, Horticulture Faculty, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Cluj-Napoca, Romania,</p> <p>Chemical and Biochemical Processing Division, ICAR – Central Institute for Research on Cotton Technology, Mumbai, India</p>	<p>Sneh Punia Bangar, <b>Kawaljit Singh Sandhu</b>, Monica Trif, Alexandru Rusu, Ioana Delia Pop and Manoj Kumar</p>	2021	Research	YES

Food Science and Technology	2021-22	<u>Proso-Millet-Starch-Based Edible Films: An Innovative Approach for Food Industries</u>	Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC 29634, USA Department of Food Science, Life Science Institute, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, 400372 Cluj-Napoca, Romania; Department of Food Science and Technology, Guru Nanak Dev University, Amritsar 143005, India; Food Research Department, Centiv GmbH, 28816 Stuhr, Germany	Sneh Punia Bangar, <b>Kawaljit Singh Sandhu</b> , Alexandru Vasile Rusu, Pinderpal Kaur, Sukhvinder Singh Purewal, Maninder Kaur, Navneet Kaur, and Monica Trif.	2021	Research	YES
Food Science and Technology	2021-22	Effect of Cross-Linking Modification on Structural and Film-Forming Characteristics of Pearl Millet ( <i>Pennisetum glaucum</i> L.) Starch.	Department of Food Science and Technology, Chaudhary Devi Lal University, Sirsa 125055, Haryana, India Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC 29634, USA Research and Development Department, CENCIRA Agrofood Research and Innovation Centre, Ion Mes,ter 6, 400650 Cluj-Napoca, Romania; ICAR-Central Institute for Research on Cotton Technology, Mumbai 400019, Maharashtra, India; Department of Food Technology, Maharshi Dayanand University, Rohtak 124001, Haryana, India;	Anil Kumar Siroha, Sneh Punia Bangar, Kawaljit Singh Sandhu, Monica Trif, Manoj Kumar, and Pritix Guleria	2021	Research	YES
Food Science and Technology	2021-22	Unraveling the efficacy of different treatments towards suppressing limonin and naringin content of Kinnow juice: An innovative report	Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC, 29634, USA School of Chemical and Energy Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor, Malaysia Centre for Advanced Composite Materials (CACM), Faculty of Engineering, Universiti Teknologi Malaysia 81310 Johor Bahru, Johor, Malaysia National Centre for Integrated Pest Management, Pusa Campus, New Delhi, India Department of Food Science & Technology, Guru Nanak Dev University, Amritsar, India	Sukhvinder Singh Purewal, Sneh Punia, Pinderpal Kaur, Kawaljit Singh Sandhu, R A Llyas, Surender Kumar Singh, and Maninder Kaur	2021	Research	YES

Food Science and Technology	2021-22	Physicochemical and Rheological Properties of Cross-Linked Litchi Kernel Starch and its Application in Development of Bio-Films	Department of Food Science and Technology Chaudhary Devi Lal University Sirsa 125055, India, Department of Food Science and Technology Guru Nanak Dev University Amritsar 143005 India, Indian Institute of Food Processing Technology Guwahati Assam 781032, India	Vinita Sharma, Maninder Kaur, Kawaljit Singh Sandhu, Vikash Nain, and Sandeep Janghu	2021	Research	YES
Food Science and Technology	2021-22	Fermented barley bran: An improvement in phenolic compounds and antioxidant properties	Department of Food Science and Technology, Chaudhary Devi Lal University, Sirsa, India Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC, USA Department of Food Science and Technology, Guru Nanak Dev University, Amritsar, India Chemical and Biochemical Processing Division, ICAR—Central Institute for Research on Cotton Technology, Mumbai, India	Sneh Punia Bangar, Kawaljit Singh Sandhu, Sukhvinder Singh Purewal, Maninder Kaur, Pinderpal Kaur, Anil Kumar Siroha, Komal Kumari, Mukesh Singh, and Manoj Kumar	2021	Research	YES
Food Science and Technology	2021-22	Rice bran oil: An emerging source of functional oil	Department of Food Science and Technology, Chaudhary Devi Lal University, Sirsa, India  Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC, USA  Chemical and Biochemical Processing Division, ICAR – Central Institute for Research on Cotton Technology, Mumbai, India	Punia, S., Kumar, M. and <b>Sandhu, K. S</b>	2021	Research	YES
Food Science and Technology	2021-22	Effect of selected physical and chemical modifications on physicochemical, pasting, and morphological properties of underutilized starch from rice bean ( <i>Vigna umbellata</i> ).	School of Bioengineering and Food Technology, Shoolini University of Biotechnology and Management Sciences, Bajhol, PO Sultanpur, Distt., Solan 173229, HP, India, Department of Food Science and Technology, Guru Nanak Dev University, Amritsar 143005, PB, India	Thakur, Y., Thory, R., <b>Sandhu, K. S.</b> , Kaur, M., Sinhmar, A., and Pathera, A. K.	2021	Research	YES
Food Science and Technology	2021-22	Rheological, thermal, and structural properties of high-pressure treated Litchi ( <i>Litchi chinensis</i> ) kernel starch	Department of Food Science and Technology, Guru Nanak Dev University, Amritsar, India Department of Food Science and Technology, Chaudhary Devi Lal University, Sirsa, India Environment and Life Sciences Research Center, Kuwait Institute for Scientific Research, Safat, Kuwait	<b>Kawaljit Singh Sandhu</b> , Maninder Kaur, Sneh Punia, and Jasim Ahmed.	2021	Research	YES

Food Science and Technology	2021-22	Silver-Based Solvent Extraction of EPA/DHA from Fish Oil: Chemistry and Process Development	Department of Process Engineering and Applied Science, Dalhousie University, Halifax, Nova Scotia, Canada, Agricultural, and Food Engineering Department, Indian Institute of Technology Kharagpur, Kharagpur – 721 302, West Bengal, India, Department of Food Engineering and Technology, Sant Longowal Institute of Engineering and Technology, Longowal – 148106, Punjab, Department of Food Technology, Akal College of Agriculture, Eternal University, Baru Sahib District Sirmour, Himachal Pradesh – 173101, India, Department of Food Science and Technology, Guru Nanak Dev University, Amritsar – 143 001, Punjab, India	Kirubanandan Shanmungam, Deepak Kumar Verma, Mamta Thakur, Ramandeep Kaur, <b>Kawaljit Singh Sandhu</b> and Maninder Kaur	2021	Publish Book Chapter	YES
Food Science and Technology	2021-22	Biotechnical Processing in the Food Industry: New Methods, Techniques, and Applications	Agricultural and Food Engineering Department, Indian Institute of Technology, Kharagpur (WB), India, Mansinhbhai Institute of Dairy and Food Technology-MIDFT, Dudhsagar Dairy Campus, Mehsana, Gujarat, India, Food Science Department at the Agrarian Sciences Center at State University of Londrina, Londrina (PR), Brazil.	Deepak Kumar Verma, Ami R. Patel, Kawaljit Singh Sandhu, Ashish Baldi, Sandra Garcia	2021	Publish Book	YES
Food Science and Technology	2021-22	Millets: Properties, Processing, and Health Benefits	Department of Food Science and Technology, Chaudhary Devi Lal University, Sirsa 125055, Haryana, India Department of Food, Nutrition and Packaging Sciences, Clemson University, Clemson, SC 29634, USA	Anil Kumar Siroha, Sneha Punia, Sukhvinder Singh Purewal and <b>Kawaljit Singh Sandhu</b>	2021	Publish Book	YES