

New Technologies to Process Value-Added, Healthy Foods from Fruits and Vegetables

ARS LOCATION:

Processed Foods Research Unit
USDA-ARS-WRRC
800 Buchanan St.
Albany, CA, 94710-1105

PRINCIPAL INVESTIGATOR:

Tara McHugh, Research Leader

MAJOR ACCOMPLISHMENTS (2009-2010):

Evaluation of New Raisin Grapes:

Through collaboration with Dr. David Ramming and the California Table Grape Commission, new raisin selections were characterized for their antioxidant and total soluble phenolic content and analyzed for the presence of individual health promoting phenolic compounds. We found that some of the new selections contained significantly greater quantities of antioxidants compounds. Deliverables – raisin varieties with increased health benefits due to improved antioxidant levels that should increase raisin sales or improved production costs reducing the need for preservatives.

New Technology to Reduce Browning in Grapes and Raisins:

Polyphenol oxidase (PPO) plays an important role in browning of grapes during drying into raisins and also during wine production after the crushing of fresh white grapes. Our research revealed that inactivation of PPO by infrared dry-blanching both accelerated the drying rate and improved the final color of raisins. As a pre-treatment method, infrared blanching is relatively easy to implement commercially and since there is no chemical solution or water involved in the operation, there is no waste-stream generated.

EXTERNAL SUPPORT:

California Table Grape Commission (through David Ramming).

COLLABORATORS:

David W. Ramming, ARS Parlier, CA.

RECENT PUBLICATIONS:

- Breksa III, A. P., G. R. Takeoka, M. B. Hidalgo, A. Vilches, J. Vasse and D. W. Ramming. 2010. Antioxidant Activity and Phenolic Content of Sixteen Raisin Grape Cultivars and Selections. *Food Chemistry* 121:740-745.
- Bingol, G. and Devres, Y. O. (2010). *Fundamentals of Drying Technologies in Food Processing*, by Istanbul Chamber of Industry, ISBN 78-9944-60-582-3.
- Lin, Y. L., Li, S. J., Zhu, Y., Bingol, G., Pan, Z. and McHugh, Tara H. (2009). Heat and Mass Transfer Modeling of Apple Slices Under Simultaneous Infrared Dry Blanching and Dehydration Process, *Drying Technology*, 27(10),1051-1059
- Bingol, G., Pan, Z., Roberts, J.S., Devres, Y.O. and Balaban, M.O. (2008). Mathematical Modeling of Microwave-assisted Convective Heating and Drying of Grapes. *International Journal of Agricultural & Biological Engineering*, 1(2), 46-54.