Cover Page - Scientific Report

BARD Project Number: IS-3368-02

Title: Understanding the Hardening Syndrome of Potato (*Solanum tuberosum* L.) Tuber
Tissue to Eliminate Textural Defects in Fresh and Fresh-Peeled/Cut Products

Investigators:

PI: Dr. Ilan Shomer _____

PI: Prof. Ruth E. Stark _____

Co-PI: Dr. Victor Gaba _____

Co-PI: Prof. James D. Batteas _____

Affiliated Institutions:

A.R.O. The Volcani Center, Israel _____

CUNY, Staten Island, U.S.A.

A.R.O. The Volcani Center, Israel _____

CUNY, Staten Island, U.S.A.

Start Date of Project: November 1, 2002 _____

Date of Submission of Report: February 21, 2007 ____

First Annual Report: 12/03 _____

Second Annual Report: 12/04 _____

Signature
Principal Investigator (PI)

Signature
Institution's Authorizing Official, Principal Institution

Final Scientific Report

Cover Page

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Date of Submission of the report: February 21, 2007

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Tuber Tissue to Eliminate Textural Defects in Fresh and Fresh-Peeled/Cut Products

Investigators

Principal Investigator (PI): Dr. Ilan Shomer

Co-Principal Investigator (Co-PI): Prof. Ruth E. Stark

Collaborating Investigators: Dr. Victor Gaba
Prof. James D. Batteas

Institutions

A.R.O. The Volcani Center

CUNY, Coll. of Staten Island

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Keywords *not* appearing in the title and in order of importance. Avoid abbreviations.

Cell wall; cellulose; immunogold labeling; intercellular adhesion; middle lamella;
nuclear magnetic resonance; patatin; pectin; stress; suberin; polysaccharides; texture.

Abbreviations commonly used in the report, in alphabetical order:

CW, cell wall; ICA, intercellular adhesion; MLX, middle lamellar complex; MAS, magic-angle spinning; NMR, nuclear magnetic resonance; NOESY, nuclear overhauser effect spectroscopy; OAM, organic acid molecule.

Budget: IS: \$173,000

US: \$172,000

Total: \$345,000

Signature
Principal Investigator

Signature
Authorizing Official, Principal Institution

Final Scientific Report

Publication Summary (numbers)

	Joint IS/US authorship	US Authors only	Israeli Authors only	Total
Refereed (published, in press, accepted) BARD support acknowledged	1		1	2
Submitted, in review, in preparation	3			3
Invited review papers		1		1
Book chapters				
Books				
Master theses				
Ph.D. theses				
Abstracts				
Not refereed (proceedings, reports, etc.)	3	5	1	7
Invited Talks	8	1	1	9

Postdoctoral Training: List the names and social security/identity numbers of all postdocs who received more than 50% of their funding by the grant.

Dr. Bingwu Yu, 129-92-0111

Dr. G. Vengadesan, 312-29-7736

Cooperation Summary (numbers)

	From US to Israel	From Israel to US	Together, elsewhere	Total
Short Visits & Meetings	1	2		3
Longer Visits (Sabbaticals)		1		

Description of Cooperation:

The collaboration was highly synergistic. Dr. Shomer's group identified simulated conditions and agents that induced the intercellular adhesion strengthening syndrome in potato parenchyma, structural characterizations and localizations, textural analyses, and pursued new findings regarding proteins and molecular identifications present in the hardened tissue. In support of these studies, Dr. Gaba developed defined tissue and cell-culture systems that promoted enhanced accumulation of biopolymers associated with the textural defect. The resulting tissue samples were characterized in parallel at both molecular and surface levels by the groups of Profs. Stark and Batteas, using solid-state nuclear magnetic resonance and atomic force microscopy methods, respectively. Cooperation among the U.S. and Israeli investigators was accomplished by several means: e-mail, phone, and personal visits. Both the PI's and participating staff members regularly exchanged project plans, data (plots, tables, micrographs), and manuscript drafts electronically. This means of communication was augmented by phone conferences, which became easier and more cost-effective during the course of the grant period. Finally, each PI made a weeklong visit to the partner lab, allowing for direct observation of lab facilities, intensive discussions with staff scientists pursuing this and related projects, and intensive work on manuscripts to be published.

Final Scientific Report

Patent Summary (numbers)

	Israeli inventor only	US inventor only	Joint IS/US inventors	Total
Submitted				
Issued (allowed)				
Licensed				