NATIONAL PROCESSED RASPBERRY COUNCIL
Research Committee
Teleconference
April 17, 2014, 9:00 a.m., PDT

Committee Members Participating:

__o__ William Beadle	__x__ Adam Enfield
__o__ Sukh Kahlon	__x__ Rob Dhaliwal
__x__ Jon Cotton	__x__ Erin Thoeny

Others Participating:

__x__ Tom Krugman	__x__ Tarun Harit
__x __ Tom Skilton	__x__ Leigh Selby

x = present o = absent

A. Call to Order; Establish Quorum; Approve Minutes

The meeting was called to order by Adam at 9:06 a.m., with a quorum present. On a motion by Rob and seconded by Erin, the minutes of the November 26, 2013 conference call were approved as submitted.

A brief discussion on crop conditions noted significant damage brought on by February's extremely cold conditions in the northern Washington area with damage less severe in southern Washington.

B. Update on Currently Funded Projects

Leigh was asked to provide a brief summary on the Council's four current research projects. She noted the progress being made and that all projects are underway or partially complete. Analysis is being conducted on results, with presentations at scientific meetings and publication to follow. She reported on the literature review database, completed by Britt Burton-Freeman. This document, comprising a summary of all raspberry related research from 1990 to 2013, includes over 270 scientific papers published during that period. The overarching conclusion from the review was that more clinical and human intervention studies need to be conducted. Besides providing researchers and health professionals a summary of past research, the database will assist in recognition for raspberries under revised dietary guidelines now being considered.

Rob asked about the timing of publication of results and when results would be brought before the public eye. He referenced the Blueberry Family Health Foundation that has been created to raise visibility for blueberry health research even further, in particular with regards

to Type 2 Children's Diabetes. Leigh responded that the Council is taking its diabetes message to the trade at upcoming conferences and in its social media program. Tom K. noted that the objective in funding a relatively large number of projects in FY 2015 was to front end load the marketing program with new research over the next few years. He also emphasized that every effort is being made to mine current and past research for all raspberry health "news".

C. FY 2015 Proposed Research Program and Budget

Adam asked Tom K. to walk the Committee through the Proposed FY 2015 Research Narrative. Getting to the substance of the report, Tom noted a total proposed budget of $766,948. This was composed of Program Management and Services ($57,750), FY 2015 Nutrition Research project as previously recommended by the Committee ($523,276), completion of nutrition research projects funded in FY 2014 ($114,159), FY 2015 post-harvest/new technology projects ($37,975), and completion of FY 2014 post-harvest projects ($33,788). In response to questions, he indicated that he knew each of the nutrition researchers, having met them at Berry Health Benefits Symposia over the last few years. He started that the BHBS was how the industry first met Dr. Crozier who has proved to be a valuable resource.

Following discussion on the Narrative and Budget, on a motion by Erin and seconded by Rob it was unanimously approved to recommend the Narrative and Budget as presented to the Council for adoption as part of its FY 2015 Budget plan.

D. Post-Harvest Research Priorities

Adam then asked the Committee for input on establishing post-harvest/new technology research priorities. This assignment had been given to a Task Force, and its responses had been funneled to the Research Committee. He reviewed a report prepared by Tom K. of a call between Mark Villata (US Blueberry) and Tom, noting a good filter for considering proposals. The filter used by USHBC comprises two questions. 1: Does the project result in a marketable product? 2: Does the project improve an existing product and can its results be universally applied? These two questions are intended to address questions over Intellectual Property and who might own it, as well as to ensure that project without broad benefits are not funded. If the answer to question 1 is "yes", the project would not be funded. If the answer to question #2 is "yes" the project would be considered for funding. With the goal of getting consumers to eat more raspberries and for manufacturers to use more raspberries in their products, the Committee agreed that these questions made sense.

Discussion then turned to progress on the three post-harvest projects the Council had agreed to fund in FY 2014. Tom K. noted that only one, Sablani's UV-C project was under contract, and that Ganjyal's contracts had bogged down over IP considerations. Tom S. provided an explanation of the IP issues presented by the proposed Ganjyal contracts. The Committee questioned whether there should be continued negotiations on these two contracts and

whether funding for these project in FY 2015 should be dropped from the budget. There was consensus that they should not be included in the FY 2015 budget, and that being the case, there was no reason to fund the first of the two years proposed for each study in FY 2014.

It was then moved by Erin and seconded by Rob to rescind the previous motion regarding the FY 2015 Research Narrative and Budget, striking the two projects proposed by Ganjyal as a result of concerns over assignment and ownership of Intellectual Property rights, as well as the appropriateness of the Council funding such types of product research generally, and instead recommend for Council approval a revised Research Narrative and Budget now totaling $637,957, of which $57,750 would be allocated to Administrative Expenses and $637,967 would be allocated to research projects. The motion passed unanimously. Tom K. was asked to communicate with WSU the Committee's action and to terminate negotiations on the two Ganjyal contracts pending Council action.

E. Other Business; adjournment

With no other business before the Committee, the call adjourned at 10:16 a.m. PDT.

FY 2015 RECOMMENDED NUTRITION RESEARCH PROJECT PROPOSAL SUMMARY

Project Area	Researcher	Title	Duration	Funding Requested
Bio-availability/Mechanisms				
	Del Rio, University of Parma, Italy	The Protective Effects of Raspberry Polyphenol Metabolites	One year	$40,000
Comments: *This proposal continues and completes funding for a current study that will establish baseline bio-availability data. In addition to looking at raspberries and cardiovascular health, it will address neurodegeneration mechanisms. Almost half the requested funds target neurodegeneration. Del Rio is a collaborator with Crozier.*				
Recommendation: *Request proposal be re-submitted examining cardiovascular health only without neurodegeneration*				
	Crozier, University of Glasgow	Identification and Quantification of Potentially Protective Polyphenol Derivatives	One year	$21,000
Comments: *Crozier's work on bioavailability and colonic metabolites is cited in many of the proposals received for FY 2015. This proposal would provide funds to complete his FY 2014 funded project. He is a prolific writer with multiple articles appearing in scientific journals from a single funded project. Access to ileostomy patients provides a unique real world look at how and where raspberry compounds are utilized in the body. His studies link to at least two other proposals (Del Rio, Rodriguez-Mateos). Crozier also has been interviewed in numerous consumer and health care professionals' publications, both print and electronic.*				
Recommendation: *Fund as proposed.*				
	Zhu, Washington State University	Dietary Raspberry, Gut Microbiota	Two years	1: $54,422 2: $54,422 Total: $108,844
Comments: *Matching grant funds of $120,598 over the two-years proposed more than double funds available to support this well written proposal. It recognizes the need to study the impact of whole fruit (rather than an extract), and has as its goals: 1) the exploration of the impact of dietary raspberry consumption on gut Microbiota and the onset of irritable bowel disease, and 2) the role of gut Microbiota in mediating the beneficial effects of dietary raspberry, specifically as it pertains to Type I diabetes and other autoimmune diseases. Gut Microbiota and biological metabolites rather than consumed compounds are rapidly becoming recognized as the key to bioactivity. Creating a large body of science on biomechanisms will be critical to establishing any future health claim. Joe Powers is a cooperator on the project*				

Recommendation: *Fund as proposed*				
	Shay, Oregon State University	Defining the Metabolic Benefits of Raspberries and Raspberry Compounds	Two Years	1: $75,000 2: $75,000 Total: $150,000
Comments: *Proposed project is designed to examine the ability of raspberries and specific raspberry compounds to influence a series of metabolic conditions of interest to the raspberry industry including diabetes, chronic inflammation, obesity, and cardiovascular health. Using a proven mouse model, the study will examine the role of whole fruit, juice, seed extract and two key components: ellagic acid and raspberry ketone. Raspberries fed to mice would be in real world quantities equivalent to 1-2 servings of fruit per day. Although raspberry ketones have largely been de-bunked as "voodoo science", there is no real science as to its efficacy. This project could provide an unequivocal answer one way or the other. Year one is proposed to confirm metabolic benefits from raspberry consumption, while year 2 would determine the biomechanisms of those benefits. The second year of the project is predicated on success in year one. While expensive for an animal trial, it is an extremely well designed project that will examine a number of combinations of compounds and health impacts, concluding with a communications strategy targeting two key audiences for the NPRC, Experimental Biology and the Academy of Nutrition and Dietetics (AND). The proposal includes matching funds of approximately 2/3 of the funding request.*				
Recommendation: *Fund as proposed*				
Diabetes				
	Noratto, Washington State University	Protective Effects of Raspberries Against Diabetes Through Modulation of Gut Microbiota	Three years	1: $25,077 2: $26,420 3: $27,297 Total: $78,794
Comments: *Dr. Noratto's proposal calls for approximately $25,000/year of matching funds, doubling resources available to this project. Similar to Dr. Zhu's proposal, it looks at the modulation of gut Microbiota. In this project, the objective is to assess the health benefits of raspberry consumption as it pertains to diabetes, diabetes-induced metabolic disorders, inflammation, and cardiovascular risk factors. Nutrition science is recognizing the inter-relationship of series of health maladies associated with Metabolic Syndrome, and the moderation of this Syndrome through dietary change to improve gut microbiotic health can have a significant impact on overall health by lowering multiple risk factors. Rader Farms and Enfield Farms are cooperators on this project.*				
Recommendation: *Fund as proposed.*				
	Basu, Oklahoma	Postprandial Metabolism	One and	$48,120

	State University	and Type 2 Diabetes	one-half years	
Comments: *Raspberries are believed to have a "competitive advantage" among all berries as a whole food moderator of diabetes. This clinical study with human patients will address the role of raspberries in the dietary management of Type 2 diabetes and the effects of raspberries to modulate metabolic stresses contributing to vascular dysfunction and cardiovascular disease in diabetic patients. The project's timeline will need to be adjusted to reflect the NPRC's fiscal year.*				
Recommendation: *Fund as proposed.*				
	Losso, Louisiana State University	Molecular Mechanisms Underlying the Protective Effects of Red Raspberries Against Insulin Resistance	Three years	1: $98,967 2: $36,930 3: $20,795 Total: $156,692
Comments: *The clinical study proposed in the project will establish the effects of whole red raspberry consumption on insulin sensitivity and inflammation and provide data on how Type 2 diabetes patients respond to red raspberry intervention. The in vitro portion of the project will determine molecular mechanisms protect cells.*				
Recommendation: *Fund as proposed.*				
	Burton-Freeman, Illinois Institute of Technology	Red Raspberries and Insulin Action	Two years	1: $78,255 2: $78,255 Total: $156,510
Comments: *Burton-Freeman proposes a clinical study to examine the relationship between red raspberries and oxidative inflammatory stress, and the relationship of these responses to insulin action based on data suggesting the role of red raspberry consumption in reducing risk factors for diabetes. It hypothesizes that red raspberries will restore impaired oxidative stress and inflammatory-mediated insulin signaling in healthy and insulin resistant individuals.*				
Recommendation: *Fund as proposed.*				
Cardiovascular Health				
	Kirakoysan, University of Michigan Medical School	Cardioprotective Benefits of Red Raspberries	Two years	1: $57,435 2: $57,827 Total: $115,262
Comments: *Kirakoysan's proposal draws its hypothesis from Crozier's work on biomechanisms. Taking a holistic view of health, it addresses the moderation of metabolic syndrome to lessen the public health burden of heart disease by reducing cardiovascular risk factors of including elevated cholesterol and insulin resistance.*				
Recommendation: *Fund as proposed.*				

New Technology/Process Research Proposals			
Researcher	Project Title	Duration	Funding Requested
Sablani, Washington State University	Ultraviolet Light (UV-C) Treatment for Improving Safety of Red Raspberries	2 years	Year 1: $13,695 Year 2: $17,760
Summary. *Responding to requirements in the Food Safety and Modernization Act, this project would investigate the efficiency of ultraviolet light to inactivate foodborne pathogens and its effect of berry quality. Many of the commonly used anti-microbial treatments used on other fruits are not transferrable to raspberries due to their fragile nature. While UV-C treatment has proven effective on smooth surfaces, little research has been done on products with complex surfaces like raspberries. Enfield Farms is a cooperator on this project.*			
Recommendation. *As food safety concerns continue to mount, it is incumbent on each industry to find ways to minimize the threat of microbial contamination. Funding for this project is recommended.*			

Recommended Nutrition Research Projects

Researcher	Project Title	FY Funding Request 2015	2016	2017
Del Rio, University of Parma	Protective Effects of Raspberry Polyphenol Metabolites	$ 40,000		
Crozier, University of Glasgow	Identification and Quantification of Potentially Protective Polyphenol Derivatives	21,000		
Shay, Oregon State University	Defining the Metabolic Benefits of Raspberries and Raspberry Compounds	75,000	75,000	
Zhu, Washington State University	Dietary Raspberry, Gut Microbiota, and Inflammatory Bowel Disease	54,422	54,422	
Noratto, Washington State University	Protective Effects of Raspberries Against Diabetes Through Modulation of Gut Microbiota	25,077	26,420	27,297
Basu, Oklahoma State University	Postprandial Metabolism and Type 2 Diabetes	48,120		
Losso, Louisiana State University	Molecular Mechanisms Underlying the Protective Effects of Red Raspberries Against Insulin Resistance	98,967	36,930	20,795
Burton-Freeman, Illinois Institute of Technology	Red Raspberries and Insulin Action	78,255	78,255	
Kirakoysan, University of Michigan Medical School	Cardioprotective Benefits of Red Raspberries	57,435	57,827	
	Recommended Project Total	$ 498,276	$ 328,854	$ 48,092