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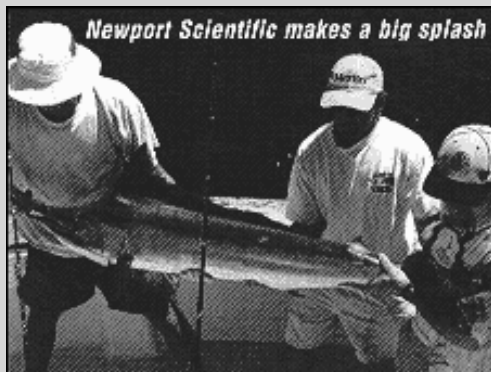
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'Pacific People and Their Food' Conference

Balmy Cairns on Australia's Great Barrier Reef was the venue for the 'Pacific People and Their Food' conference in August 1998, which brought together the AACC and the Royal Australian Chemical Institute Cereal Chemistry Division.

Newport Scientific sponsored a day of fishing and snorkelling on the reef - we congratulate Paul Panozzo of Bunge Defiance Mills for the winning catch, a fine marlin. While we let the marlin go, over 50 delegates enjoyed a barbeque of the remaining catch, expertly executed by Rod Booth.



The conference program began with the Pacific Rim day and the following days were devoted to the RACI Cereal Chemistry Division Conference. Newport Scientific featured at the trade show, exhibiting the RVA-4 with new ThermoLine for Windows version 2.0 and the Laboratory/Factory Mill 6000 series. The last day featured the RVA Symposium, which attracted a truly international audience of 50-60 delegates from all around the Pacific Rim.

Our thanks to conference co-chairs, Tony Blakeney and Lindsay O'Brien, for

having the papers bound and available to delegates at the opening of the conference and for the exciting program of social events, the highlight of which was the train trip through tropical rainforest to a silver service dinner.

RVA at AACC Annual Meeting

Once again, the RVA featured at the AACC Annual Meeting where we were delighted to see the RVA receive mention in 22 of the posters presented.

Foss North America welcomed delegates to the traditional table top exhibition to see the RVA while Newport Scientific's Senior Research Scientist, Mark Bason, spoke at the technical sessions. Mark's topics were our brand new gluten application, 'Measuring Gluten Quality in Flour - A Novel Method Using the Rapid Visco Analyser', and the latest results from rice breeding and quality assurance programs, 'Interpreting RVA Curves Using Cluster and Multivariate Analysis'. (Regular readers of RVA World will have read about our investigations into wheat gluten quality in flour using the Rapid Visco Analyser in Issue 11.)

Please contact us if you would like copies of Mark's papers presented at AACC Minneapolis, September 13-17, 1998.

New Milk Protein Analysis by RVA

The brand new milk protein application for the RVA had its international debut at the 25th International Dairy Congress in Denmark 21-24 September,

1998. This novel application for the RVA to protein testing generated a high level of interest in the session 'New Developments in Dairy Science and Technology'.

What's New at Newport

Newport Scientific Method STD1 has received first approval from the American Association of Cereal Chemists (AACC) entitled 'General Pasting Method for Wheat or Rye Flour Using the Rapid Visco Analyser', AACC Method 76-21.

Focus Fast with Newport's Search Engine. From October '98, Newport Scientific's homepage has a search engine to make it quicker and easier to cut straight to the topics that interest you. Simply type in your key word and it will search methods, application notes, RVA World and news items to find the most relevant matches. Look for the search engine on our welcome page at: www.newport.com.au

Exclusive Distributor for Malaysia. Newport Scientific would like to welcome the newest member to our family of RVA distributors worldwide: Chemopharm Sdn Bhd, based in Petaling Jaya, Malaysia. Now Newport Scientific has exclusive sales and service representation in 14 countries, and an RVA distributor in 21.

In this issue

- ✧ **Milk protein analysis**
- ✧ **Cassava starch**
- ✧ **RVA Symposium**

RVA as a Tool for Optimisation of Cassava Starch Manufacturing Regarding to SO₂ Application and Storage Time



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1. The evaluation of peak viscosity of cassava starch as a function of SO₂ concentration (mg/kg) and storage time (month)

RVA can be used to predict peak viscosity of cassava starch when stored for different periods of time using a series of equations as shown below.

At storage time = t

$$RVU_t = RVU_1 + b_1 + b_2 t_2$$

$$b_1 = -0.1936[SO_2] - 2.0457$$

$$b_2 = 0.0099[SO_2] - 0.1213$$

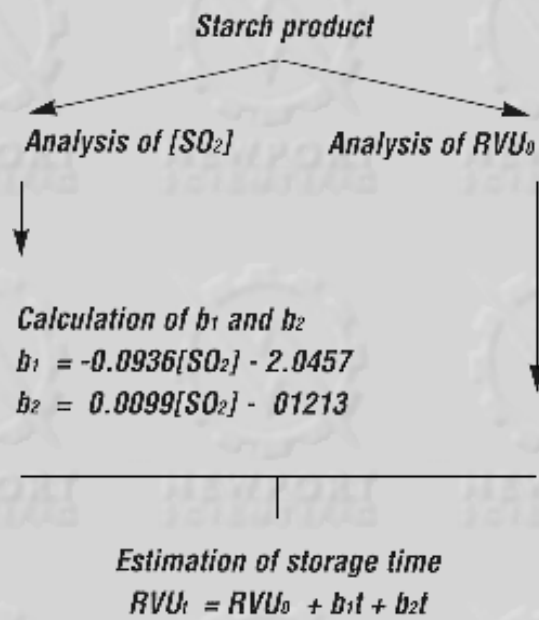
3. The establishment of a limit value of initial viscosity for quality control

RVA can be used as a tool for establishment of a limit value of initial viscosity in cassava starch manufacturing. Starch manufacturers can specify the standard values of required quality of final products including final viscosity, storage time for distribution, and SO₂ concentration. This allows the possibility to set up the limit value of initial peak viscosity for quality control and can be readily monitored during starch processing by RVA.

2. The estimation of storage time limit for market distribution of cassava starch
 RVA can be used to estimate the storage time limit for market distribution of cassava starch processed with different sulfur dioxide content in order to ensure a high consistent product quality, for instance:

*Peak viscosity
of cassava starch product = 300 RVU*

Goal : RVU_t = 300



Parameter	Standard value	
Final Viscosity	300	
Storage time (months)	3	
[SO ₂] in product (mg/kg)	Lower limit = 50	Upper limit = 200
b ₁	-6.7257	-20.7657
b ₂	0.3737	1.8587
Initial viscosity (RVU)	317	345



Assessing Milk Proteins in the RVA

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Introduction

Skim milk powder (SMP) and whey protein concentrate (WPC) are used widely in the food industry for their functional and nutritional properties. Processing of SMPs and WPCs can be altered to produce powders and concentrates with varying gel characteristics. If the RVA could be used to track such differences, it could prove useful for monitoring processing conditions and quality of these milk products.

Although primarily used to characterise the gelling properties of starches, the Rapid Visco Analyser (RVA) has more recently been used to assess the gel properties of wheat and soy proteins. The goal of the work reported here was to develop preliminary methods using the RVA to indicate protein quality of SMPs and WPCS.

Materials and Methods

Samples: 30 SMP samples (100 g) were produced, with the specific procedures for three shown in Figure 1. Two WPC samples (400 g) were processed at high and low levels of heat. Samples were obtained from commercial sources. Protein values varied from 33.26% to 34.65% for SMP and 76.01 % to 78.34% for WPC.

Constituent analysis: As outlined by Bennett et al., 1998 AIFST annual meeting, Australia.

RVA analysis: SMPs were milled and sieved (250 micron), then a portion of the SMP, equivalent to 4.5 g protein, added to BTP buffer (pH 6.5) to give a total weight of 28.5 g. This mixture was shaken then tested in an RVA-4 using the profile shown in Table 1.

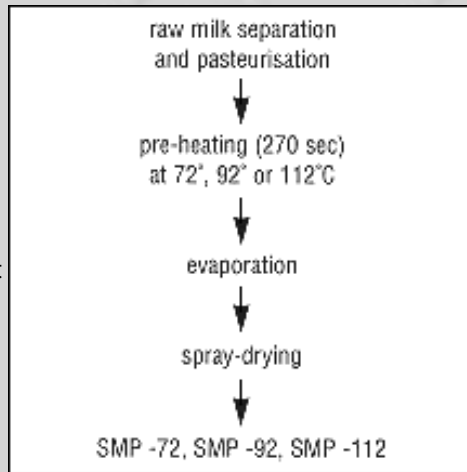


Figure 1. Production of SMPs.

Results and Discussion

Coefficients of variation for the SMPs were less than 3%, indicating satisfactory repeatability of the method. Differences could be seen for samples produced under different levels of shear, temperature and time (Figure 2). Similar differences could be seen between the two WPC samples (Figure 3). For SMPs, initial RVA peak time correlated significantly ($p < 0.05$) with proportions of individual native whey proteins (native α -Lactalbumin (-ve), native B-Lactoglobulin (-ve), native BSA (-ve), ANSHI (+ve), PS14.6 (-ve)) and with pre-heat temperature. The methods developed here showed good repeatability and correlated with processing and constituent data. The RVA method was able to discriminate between samples and, as such, could be useful for monitoring processing conditions of milk products. Further tests are required to identify the causes of the various features of the viscosity curves, and to relate these features to end product quality parameters.

Time (hh:mm:ss)	Value
00:00:00	50.0°C
00:00:00	1000 rpm
00:01:00	160 rpm
00:01:00	50.0°C
00:04:30	90.0°C
00:09:30	90.0°C
00:15:00	30.0°C
00:20:00	30.0°C (end of test)

Table 1. RVA testing profile for skim milk powder.

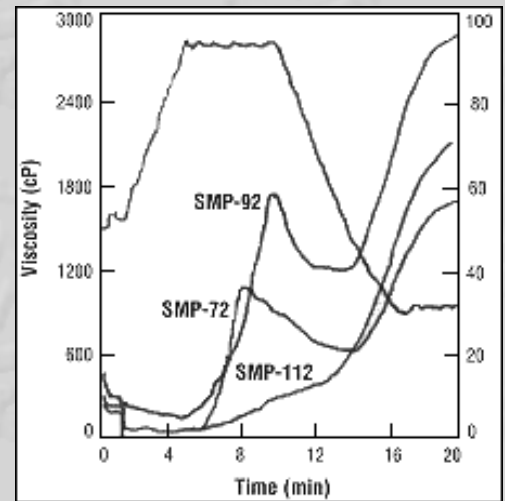


Figure 2. RVA curves of SMPs produced under different processing conditions.

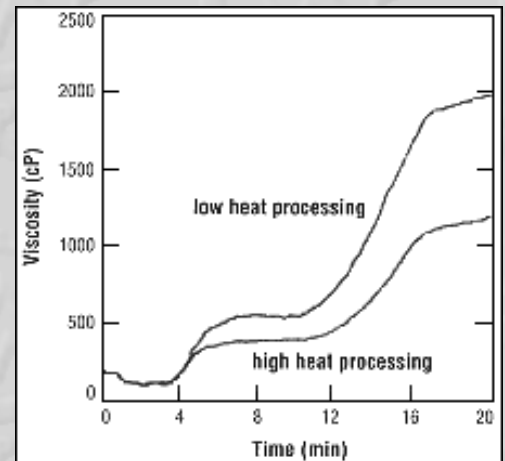
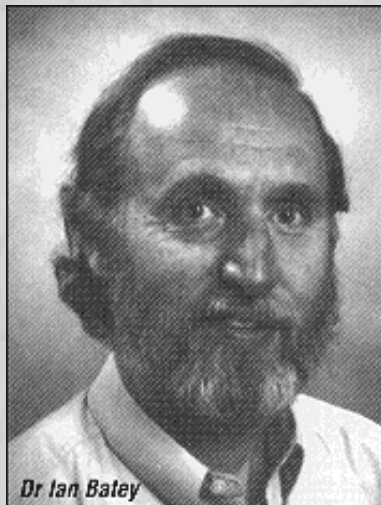


Figure 3. RVA curves for WPC samples processed using different temperatures.



RVA Symposium: Success at Pacific Rim Conference

Our thanks to Dr Ian L. Batey from CSIRO, Grain Quality Research Laboratory at North Ryde, organiser and chairperson of the RVA Symposium held at the 'Pacific People and Their Food' Conference, Cairns, Australia,



Dr Ian Batey

The purpose of the symposium was to bring together the cereal chemists, starch chemists, food scientists and others who are using the Rapid Visco Analyser as a tool towards achieving greater efficiency in producing better quality products. More than 50 scientists enjoyed a half-day session combining presentations and lively discussion.

Relationships between RVA Pasting Characteristics and Amylose Content of Normal, Partially Waxy, and Waxy Wheat Flours and Starches

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²Montana State University, Bozeman, MT (MJG) and VitaSoy USA, Inc. (MZ).

Survey on the Quality of Some Chinese Commercial Flours with the Rapid Visco Analyser

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Cereal, Oil and Food Research Centre, Ministry of Internal Trade, Beijing, China.

Application of the RVA in Starch Biodiversity Studies

H. Corke
Cereal Science Laboratory, Department of Botany, University of Hong Kong.

Our thanks to those who presented papers at the RVA symposium, and others who contributed to its success.

Papers delivered at the RVA symposium will soon be published in full on this homepage.

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Evaluation of Gelatinisation Properties of Rice Grains with a Rapid Visco Analyser

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Application of RVA to Optimisation of Sulfur Dioxide Concentration in Cassava Starch Manufacturing

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Using the Rapid Visco Analyser to Measure Wheat-Gluten Flour Quality

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Using the Rapid Visco Analyser to Characterise Wheat and Soy Proteins

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The RVA: A New Method for Product Development and Quality Control in Ready-to-eat Breakfast Cereals (RTE)

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Effects of Interactions between Protein and Starch on Viscosity Measured by the Rapid Visco Analyser

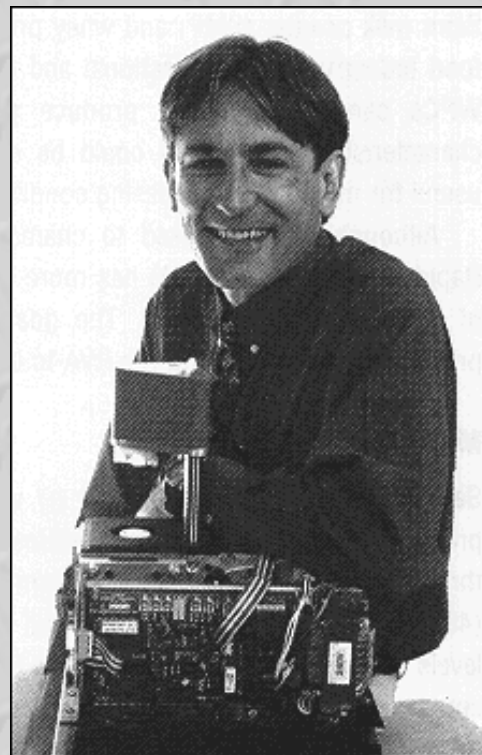
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Meet the People:

Ivan Zlatin



Ivan joined Newport Scientific in January 1998 as our Sales & Service Representative for Australian customers. Trained in electronics, he was initially involved in the development of high-speed digital networks and then took his skills to high-profile scientific instrument suppliers such as Waters Chromatography and Shimadzu Scientific Instruments. He comes to us with nine years' experience providing service and technical support to Australian laboratories.

Committed to ensuring that all Australian customers receive total support from Newport Scientific for their RVAs, Ivan's motto is 'Service with a Smile'.



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