

# InBrief30

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**Welcome to the Spring 2005 edition of InBrief. Many exciting events have happened at Biocatalysts recently including a Royal visit from HRH Prince Andrew, the Duke of York.**

Prince Andrew is the Queen's second son and is 4th in line to the throne. He has special responsibility for Trade and Industry and spends much of his time visiting companies in the UK and abroad talking about the issues facing businesses on a daily basis. He was a delightful visitor and spent an hour talking to staff about their various jobs. Full coverage can be found on page 2.

We have had a few changes in personnel which you can read about including the recruitment of a Market Manager in the US in conjunction with our distributor Kaltron Pettibone. David Godke joins us with a wealth of experience and we look forward to him championing Biocatalysts products in North America.

Level I Agents Training has now been completed and we are just scheduling Level II. Feedback from Level 1 was excellent and the team of staff involved thoroughly enjoyed getting out and meeting our agents.

For those of you attending IFT 2005 in New Orleans you can look forward to meeting Stuart West (Managing Director), Deborah Davies (Sales Executive), Andy Ellis (Sector Expert) and the Kaltron Pettibone team (including David Godke) where you can discuss your enzyme requirements or process problems in detail.

Wishing you a healthy and successful Spring and Summer.

**Caroline West**  
Editor

## HRH Prince Andrew visits our new factory



HRH Duke of York tours the factory with Managing Director Stuart West.



Research Scientist Ceri Simpson demonstrates the use of enzymes to maximise carrot juice yield.

On 13th April 2005 we were delighted to welcome HRH Prince Andrew, the Duke of York, to the Biocatalysts premises. Accompanied by the Queen's Lord Lieutenant Mrs Kate Thomas, Her Majesty the Queen's local representative, he toured the premises meeting people and watching scientific demonstrations conducted in the large bespoke laboratories.

The Prince started his visit, arriving by helicopter, meeting local dignitaries. Once inside Biocatalysts the visit became essentially a private one with His Royal Highness meeting all the staff and spending time chatting and watching the highly qualified workforce developing new products for the food enzyme industry.

The Duke was visiting us as part of his role as Special Representative for International Trade and Investment, working on behalf of UK Trade & Investment, the government body which supports UK companies trading internationally and encouraging foreign investment.

He was keen to talk to people at the sharp end of the business from those in administration to production. He talked extensively to both Eira Brown who deals with sales order processing for Biocatalysts and also Clare Simpson whose remit is regulatory affairs. Both were articulate about the difficulties experienced by companies in the UK today and pending legislation means that this will almost certainly become worse in the future. The Prince went away well informed about the issues facing Biocatalysts and the problems experienced by companies when such a large proportion (over 80%) of the business is export based.

Managing Director Stuart West and Promotions Manager Caroline West gave a short presentation about the company highlighting its obsession with exceptional customer service and the ability to custom-tailor products so that the enzyme is optimised for the individual process to achieve the best possible results for the end-user.

The visit lasted about an hour, during which time the Prince met most of the staff. He then went on to complete another two visits before leaving Wales.

## www.biocatalysts.com

We have just finished a major overhaul to our website and it really is looking great, make sure you visit [www.biocatalysts.com](http://www.biocatalysts.com) and have a look.

One of the biggest improvements is on the agents map of the world. Now you can clearly see whether we have an agent in your part of the world and where there is a link, you can click directly on the agent to be taken to their website.



## IFT 2005 – New Orleans

Home of jazz and jambalaya, IFT Food Expo hits New Orleans in July this year and what a great venue it is! We are sharing a stand this year with our US distributors Kaltron Pettibone. We have a great spot, Booth 1013. At long last the Institute of Food Technologists have reviewed the show and decided to get rid of the last half day which was always poorly attended. This year the show runs from Sunday 17th July to Tuesday 19th July 2005. If you would like to meet Managing Director Stuart West, Sales Executive Deborah Davies, Sector Expert Andrew Ellis or any of the Kaltron team including David Godke please contact the Biocatalysts Sales Office.

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## 2 new recruits

**Chris Owen joins Biocatalysts as an International Market Researcher, as part of the DTI funded Knowledge Transfer Partnership (KTP). The KTP scheme is specifically designed to allow businesses to benefit from the knowledge and expertise of Higher Education Institutions and assist in their growth, whilst also allowing graduates to improve their career prospects by benefiting from a structured work programme and tailored personal and professional development.**

Acting as a fulcrum between Biocatalysts and Cardiff University, Chris will be responsible for identifying new opportunities and understanding buyer behaviour through working closely with customers and analysing key markets to help improve customer satisfaction and facilitate future growth.

Chris brings with him over four years experience of product marketing and strategic planning gained with Colchester based air movement company, Flåkt Woods, where he developed a strong understanding of customer requirements, which is hoped to prove extremely beneficial to Biocatalysts' customers.

Speaking of his decision to join Biocatalysts Chris states that "having visited the fantastic new facilities and met with the team, it didn't take long for me to accept Biocatalysts' employment offer. I see this as a prime opportunity to use the skills that I developed whilst at Flåkt Woods within an interesting and dynamic industry, whilst also gaining invaluable on-the-job and tailored professional training."

We have also taken on Nicola James, in the role of Administrator. Nicola joins us from Denver Construction where she worked for 5 years as Accounts Manager responsible for all financial issues within the company. At Biocatalysts she has a slightly wider remit which includes personnel issues and the purchase of raw materials as well as the financial side.



## New baking Lipase

Lipomod™ 726P was mentioned in the last edition of InBrief. Since then we have sent out lots of samples for this product. The feedback we have received on this product has been exceptional. It is significantly cheaper than other baking lipases currently available. It can be used in addition or instead of standard baking emulsifiers. If you think this product could be worth a try why not request a sample from our website ([www.biocatalysts.com](http://www.biocatalysts.com)), via the reader reply page of this newsletter or direct from our sales office.

## Technical article - carrot juice - the healthy choice

**The health benefits of fruit and vegetables have been long proven. Now, most people are aware of the recommendation to eat 5 portions of fruit and vegetables a day, although the average American is still only eating 2 portions of vegetables a day and no fruit!**

So, an alternative to eating the whole fruit and vegetable is to drink them as juice. The sweetness of fruit juices makes them very palatable, so they are often combined with vegetables to give an overall flavour that will appeal to both children and adults alike. Carrot juice is the most frequently used base vegetable, therefore maximising the yield of carrot juice makes an important contribution to making the production of fruit and vegetable juices as profitable as possible. How can enzymes assist this process?

Enzymes can be used to assist the production of cloud-stable carrot juice, resulting in greater maceration and solubilization of the vegetable tissues, higher yields of juice, with more dissolved solids, improved clarity and reduced viscosity of the juice and less insoluble waste.

The rigid structure of vegetables such as carrot comes from their tough cell walls made with interwoven strands of structural carbohydrates such as cellulose and pectin. It requires a carefully tailored product comprising pectinases, cellulases and other carbohydrase enzymes to break down these structural polymers and release the valuable components within.

Biocatalysts Ltd developed Depol™ 40L as a broad-spectrum carbohydrase preparation containing a mixture of pectinases, polygalacturonases, cellulases and hemicellulases to macerate vegetable tissues. These enzymes are active over a wide pH range. Depol™ 40L is particularly suitable for the production of cloud stable carrot juice concentrate and other vegetable juice concentrates. For example, addition of Depol™ 40L can produce a 20-60% improvement in the yield of carrot juice (solids in the concentrate) compared to processing without enzyme. More recently Biocatalysts Ltd has developed a new enzyme that gives even higher yields called Depol™ 692L.

### Depol™ 692L, a New Improved Enzyme for Carrot Juice Extraction

Depol™ 692L is our most aggressive enzyme for macerating plant tissues. It was developed to specifically aid carrot juice extraction processes. In tests Depol™ 692L released more solids and provided a higher yield of juice than all other enzymes tested and can more than double the yield of juice extracted. Depol™ 692L is a very broad spectrum carbohydrase based on our proven product Depol™ 40L. The enzyme's unique activity comes from its ability to remove ferulic acid esters which have been described as the rivets holding plant cell walls together, in combination with other broad spectrum carbohydrases.

Depol™ 692L can be used in a variety of processes such as the production of vegetable boullion, to give significantly higher maceration of plant tissues, increased product yield, improved solubilization of complex polymers and reduce insoluble waste.

Depol™ 692L is GRAS status and conforms to the FCC/FAO/WHO/JECFA recommendations for food grade enzymes. All dose rates suggested in this bulletin are to be used as a guide only; it is recommended that clients perform their own evaluation in the plant. Biocatalysts will be pleased to provide assistance with quality and process evaluations and applications of our product.

**PROCESS DESCRIPTION**

The extraction of juice from carrots, unlike some other vegetables, is a very demanding process which requires proper handling to reduce unwanted chemical oxidation and maintain cloud stability. As shown in Figure 1, the carrots are ground after cleaning and peeling (optional). To prevent enzymatic browning, the blanching should be as quick as possible.

One option is to use direct steam injection for rapid heating. Acid is added at the grinding or heating stage to bring the pH to 5-5.2. This acidification results in optimum enzyme reaction and prevents colour deterioration. Water can also be added at this stage to facilitate handling of the slurry and juice extraction. The slurry is cooled to about 30-50°C for optimum enzyme action; this can be achieved by vacuum cooling.

For yield improvement and to facilitate extraction, Depol™ 40L or Depol™ 692L is added (200-300ppm of Depol™ 40L or Depol™ 692L, on carrots). This will result in an approximate yield of 50-70kg of juice solids (in the finished concentrate) per tonne of raw carrots processed, compared to 35-45kg solids without the use of enzymes. A 20-60% yield improvement is not uncommon.

The enzyme costs are minimal in relation to the higher juice solids recovery. Normal carrot juice is too viscous to be concentrated beyond 36° brix. With the use of Depol™ 40L or Depol™ 692L, the carrot juice can be concentrated up to 70° brix, if so desired. The enzymes added for yield improvement also serve to reduce viscosity. For viscosity reduction alone Depol™ 40L or Depol™ 692L could be added in the surge tank after pressing or decanting. The time and temperature available at this stage will determine the dose requirements of the enzyme.

**DOSING**

Different dose rates can be used for different applications as shown in Table 1 below. Actual time and temperatures of the contact will determine precise amount of enzymes to be used.

Table 1. Dose and application of Depol™ 40L or Depol™ 692L for carrot processing.

Dose	Application
2000-5000 ppm	For maximum liquefaction
200-500 ppm	For yield improvement
20-50 ppm	For viscosity reduction

Figure 1. Production Process for the Extraction of Carrot Juice

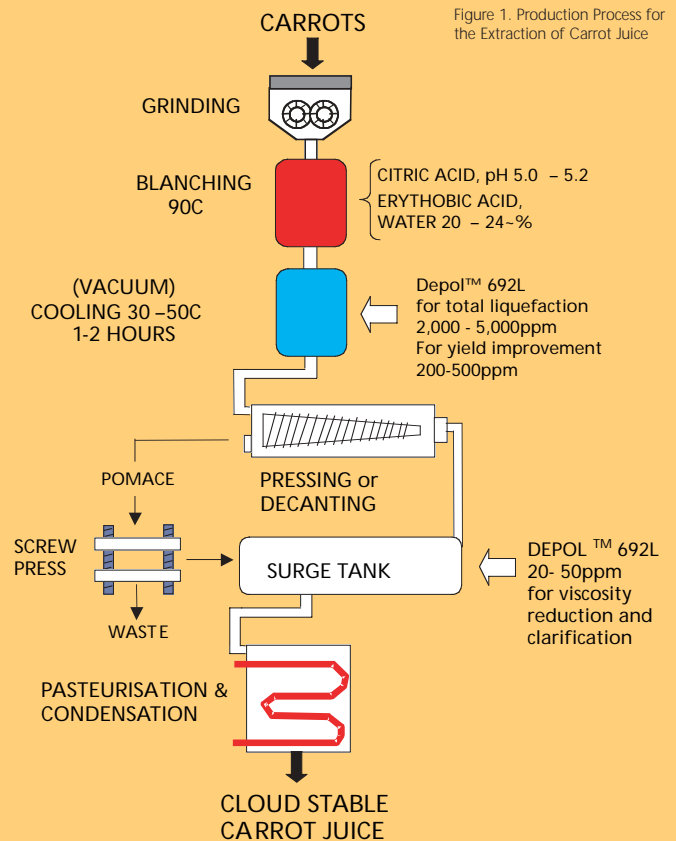


Table 2. Common Problems Encountered in Carrot Juice Extraction

Problem	Solution
Digestion taking longer than predicted	<ol style="list-style-type: none"> <li>1. Ensure carrot mixture is kept warm throughout the enzyme incubation and that temperature does not drop thus reducing enzyme efficiency.</li> <li>2. Check the pH of the carrot mixture and adjust to approximately pH 5.0 with citric acid if necessary.</li> <li>3. Try adding a higher dose of Depol™ 40L or Depol™ 692 L.</li> </ol>
Enzyme not working	Ensure the enzyme has been added at the correct temperature and that direct heat has not denatured the enzyme rendering it ineffective.
Large chunks of carrot remaining untreated	The enzyme is not effectively getting into contact with the plant tissues. Try physically chopping or grinding the carrot into smaller fragments prior to adding the enzyme.
Low juice yield with old carrots	Carrots that have been stored or allowed to dry out will give lower yields of juice than fresh carrots. Try adding more water and extending the length of the enzyme incubation.

## News from over the pond



Biocatalysts distributor Kaltron Pettibone have restructured their food division and as a result have appointed David Godke as Market Manager for its food ingredient division. Mr. Godke will be specifically responsible for growing the company's food enzyme line which is supplied by speciality enzyme company Biocatalysts based in the UK.



Godke brings more than 35 years of experience in sales, marketing, national account management, technical and production. His last position was at Ingredients Resourcing, LLC., where he was responsible for new product development for speciality ingredients.

*"Dave's industry experience and technical expertise will be a critical element to our growth as we continue to add to our food enzyme, bakers yeast, phosphate and acidulant product lines,"* said Jeff McShane, Sales Director for Kaltron. *"Our goal is to be a single source solution for specialty food ingredients; the hiring of Dave will help us accomplish this goal."*

## Other agent news:

We have recruited a new agent since the last edition of InBrief, European company KUK have numerous offices situated in many countries including Austria, Germany, Czech Republic, Slovenia, Slovakia, Hungary, Serbia and Montenegro, Bulgaria and Romania.



KUK initially made contact at Food Ingredients Exhibition in 2003. They have contacts in all the major food sectors including baking, egg and fruit processing.

## Agents only area

When we had independent market research undertaken 18 months ago to assess how good a principal we were to our agents, one of the comments that came back was that we were occasionally difficult to contact. Given that the telephone is answered promptly and enquiries responded to quickly we were a little perturbed at this and turned our attention to solving the problem as effectively as we could. We eventually realised it was due to the time differences between us and other countries and the idea of an agent dedicated area on the website seemed a good idea. To this end we decided to set up an agents only 'Pilot' area on our website. Primarily we hang certificates of recently despatched orders in a downloadable format for the two agents involved in the pilot. However we have the capacity to hang any information that is required. It is our intention to offer this service to all agents who require it by the end of the year.



## Changes in production personnel

After 15 years of dedicated service Production Manager David Isaac retired on 31st March 2005. Dave will be missed by all the staff here and a party was held in his honour at which he was presented with vouchers to spend on his beloved garden.

In light of Dave's retirement we have promoted Mark Jones, one of our Speciality Production team, to Production Supervisor.

# ReadersReply

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I would like to receive further details on the following products

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**SAMPLE PRODUCT REQUIREMENTS:**

I would like to receive a sample of the following products:

- Lipomod™ 726P
- Depol™ 692L

What application is the requested sample for?

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**CUSTOM TAILORED PRODUCTS:**

My special application for enzymes is:

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