



CASE STUDY: **BESMOKE**

Huw Griffiths founded Besmoke in 2004. Besmoke's mission was to combine the art and science of smoke to create the safest and most flavoursome natural smoke flavour systems. Passionate flavour innovator Huw teamed up with our world-leading flavour and chemistry experts to offer the safest yet tastiest naturally smoked ingredients on the market for food manufacturers worldwide.



BESMOKE AND THE UNIVERSITY OF READING

In 2012, Besmoke collaborated with Dr David Baines, flavour chemist, food scientist, inventor and past Chairman of the British Society of Flavourists, and the University of Reading's Flavour Centre. Together, they created the ground-breaking PureSmoke™ Technology. The patented process allows for a safer and more flavoursome smoke taste by significantly reducing harmful Polycyclic Aromatic Hydrocarbons (PAH) in smoke. Their research proves that by removing the majority of these toxins, only the most desirable smoke volatiles remain, ensuring the smoky flavour is prevalent and consumer safety is significantly improved.



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IMPACT ON THE FUTURE OF FOOD

Laboratory experiments showed that the PureSmoke process reduced PAH up to an impressive 94%. Besmoke boasts an 85% reduction in the commercially manufactured smoked foods, with a target of 90-95% by 2017. Through collaborating with flavour and chemistry experts from the Flavour Centre at the University of Reading, Besmoke achieved a unique natural smoke flavour system that improves consumer safety without compromising on flavour.

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CASE STUDY: ELLA'S KITCHEN

Paul Lindley created Ella's Kitchen in 2006, aiming to give children the opportunity to eat healthier food and learn that food can be fun. The company's products – baby and toddler food containing no added sugar or salt – help children develop healthy eating habits. But it took lots of research to get there...



ELLA'S KITCHEN AND THE UNIVERSITY OF READING

Ella's Kitchen trialled their original products using the University of Reading's state-of-the-art food processing pilot plant within the Department of Food and Nutritional Sciences. Working with Dr Susan Matos in Reading's Knowledge Transfer Centre, Ella's Kitchen and Reading academics also developed a multi-sensory marketing approach for enhancing children's enjoyment of healthy food.

This marketing approach was based on a study they conducted to find out whether familiarity with the sight, smell and feel of food reduces neophobia towards that food. They introduced a series of sense-based activities involving fruit and vegetables to 55 children aged 12-36 months in their nursery environment.



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The activities included looking at the food when it was cut open, touching and smelling the food when it was cooked, singing about the food and hearing a story about the food. The team assessed the impact of these activities on children's willingness to taste the foods compared to a control group.

IMPACT ON THE COMPANY

In a mealtime context, the children who had taken part went on to taste significantly more of the vegetables they had been exposed to than the control group. These results suggest that activities exposing children to the non-taste sensory properties of food might assist in encouraging higher levels of vegetable consumption. This also resulted in the company inspiring customers to offer a wider sensory exploration of food than simply taste in order to encourage their babies to try new foods.

A further project with academics in the Department of Food and Nutritional Sciences at the University of Reading has helped transform Ella's Kitchen's approach to sourcing raw materials. The facilities within the Department enabled them to maintain their consistent high-quality finished products while reducing costs.

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CASE STUDY: R&G FRESH HERBS

Richard and Gloria Stevens founded R&G Fresh Herbs in 1958. The company supplies fresh cut herbs to supermarkets, wholesalers and major restaurants, among other food sector services.



R&G FRESH HERBS AND THE UNIVERSITY OF READING

R&G teamed up with Dr Carol Wagstaff from the University. Working closely with Carol and Dr Laura Jackson through a Knowledge Transfer Partnership, they found that ethylene, a naturally-produced plant hormone, accelerates degradation of the produce. Therefore, herb shelf-life can be extended through the removal of ethylene from the environment inside the packaging.

The company continued their research by working with Ben Cruickshank, a PhD student at the University of Reading, to improve the quality of cut fresh herbs using optimised pre-harvest cultivation conditions. Herbs are primarily consumed for their flavour, which in turn is determined by genetic and environmental influences. Herbs require nutritionally improved soil to grow well and the over-use of inorganic fertilizer is expensive, results in the increased use of fossil fuels and does not help soil structure. R&G and the University are investigating the use of Recycled Household Compost (RHC) as a sustainable alternative to improve soil health and have examined its impact on plant architecture, yield and flavour.



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IMPACT ON THE FUTURE OF FOOD

Following her work with R&G Fresh Herbs, Dr Laura Jackson was taken on by the company as New Product Development Manager. She explains, "We've been running trials and experiments that block the ethylene receptors. We've worked with coriander – a herb that very quickly turns an unsightly yellow when it degrades – and so far the results are extremely promising." Through collaboration with experts in the Department of Food and Nutritional Sciences at the University of Reading, R&G Fresh Herbs have successfully extended the shelf-life and retained the flavour of their produce.

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CASE STUDY: VALLEY PRODUCE LTD

Valley Produce Ltd, established more than 25 years ago, grows herbs and speciality Chinese vegetables in Berkshire, Hampshire and West Sussex. The company aims to achieve the highest possible growing standards with the lowest environmental impact and supplies fresh herbs and Chinese vegetables to a range of food service, hospitality and wholesale clients.



VALLEY PRODUCE AND THE UNIVERSITY OF READING

Our Knowledge Transfer Partnership (KTP) with Valley Produce has involved developing alternative fresh herb products for the food industry in order to substantially reduce crop waste, a substantial problem in the industry, thus providing a route to the sustainable intensification of land, and developing high value, traceable, British products.



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IMPACT ON THE COMPANY

As a result of the partnership, Valley Produce has successfully developed a highly innovative and original fresh herb product which has seen very strong interest from a diverse range of existing and potential food industry customers. The graduate who carried out the research during the KTP has been taken on as the company's NPD and Technical Manager and is in the process of developing plans for the commercial manufacture of the new product, expected to be on the market in 2018.

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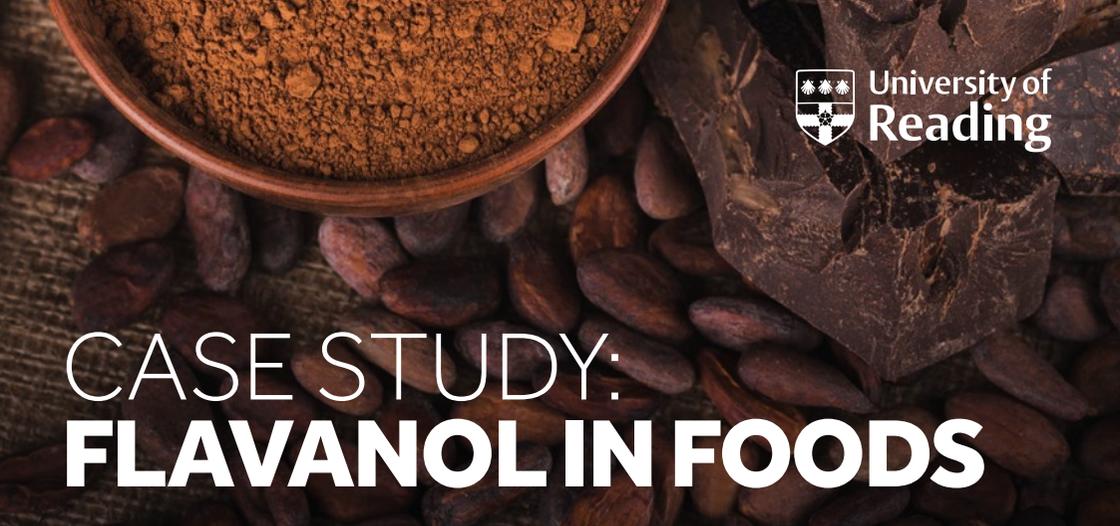
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CASE STUDY: FLAVANOL IN FOODS

Flavanols are a group of compounds found in cocoa beans, tea leaves and red grapes. The University of Reading's Professor Jeremy Spencer has pioneered research into how the human body absorbs and metabolises flavanols, and the impact they have on the brain and cognition as well as cardiovascular function. His research has added to evidence suggesting that a flavanol-rich diet can have a positive impact on circulatory, cardiovascular and gastrointestinal tract health.

Presentation of these results at international conferences prompted discussions with a global food manufacturer regarding collaborative research potential and support. This resulted in a £1.1 million investment to support a core research laboratory at Reading, looking into the absorption, metabolism and health effects of cocoa-derived flavanols in humans.



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THE RESULTS

This research collaboration also informed the development of a cocoa-extract supplement drink and supplement extract, both widely available in the US since 2010. This in turn sparked interest from other multinational corporations looking to market flavanol- and other flavonoid-containing health products, resulting in an additional £917K investment by industry. Research by Reading and others has provided evidence that consumption of these products can improve memory and cognition, cardiovascular health and digestive health for consumers.

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CASE STUDY: THE HEALTHIER MILK STORY

Research funded by the European Commission and by BBSRC/DRINC at the University of Reading showed that cows' diets could substantially affect the various saturated fatty acids found in milk. The researchers found that adding oils or oilseeds to a cow's diet achieved a 25% reduction in saturated fat in whole milk – as well as a rise in "good" unsaturated fats. Moreover, the changes to the cows' diet also reduced the animals' methane production, a harmful greenhouse gas.

Following dissemination of the results at public events across the EU, the University of Reading developed a working relationship with a leading UK retailer. Using the results, they launched the "Healthier Milk" project, supporting its suppliers in providing a new diet regime for their dairy cows and rolling out a low saturated fat milk across its stores in 2011. Despite this there were still little high quality research data to confirm whether such milk and dairy foods produced from the milk would reduce the risk of cardiovascular diseases compared with conventional milk.



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THE RESET STUDY

Subsequently, the University successfully obtained a major research grant from the Medical Research Council to study the effects of 'modified' dairy products on risk factors of cardiovascular diseases. This involved producing modified milk to make UHT milk, cheese and butter. These were compared with conventional products in long and short-term human intervention trials with a wide range of outcome measurements. The study is ongoing and whilst not all the results are yet available, the initial results look very promising.

Researchers at the University of Reading continue to disseminate findings from their ongoing study.

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