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Continued scientific research indicates new potential areas of benefit from chocolate

High flavanol chocolate confirmed to positively impact brain performance

- **Chocolate with high content of cocoa flavanols helps to promote brain performance**
- **Randomized, controlled, double-blind study revealed, for the first time, that regular consumption of high-flavanol chocolate, can promote brain performance**
- **Barry Callebaut remains committed to researching new areas of benefit for chocolate products**

Zurich/Switzerland, February 16, 2012 – Chocolate can be good for the brain – at least if you eat the right kind. Chocolate – in particular the dark variety – is already well known for its positive effects when consumed in small quantities. Scientists have now found new evidence for another effect: Chocolate or cocoa powder containing higher amounts of so-called cocoa flavanols can positively influence brain performance in healthy middle-aged individuals in a natural way. Put simply: People who regularly consume cocoa flavanols, such as those found in Barry Callebaut's high flavanol cocoa and chocolate, can think just as well as others, but with less effort. This was revealed in an independent study by Professor Andrew Scholey and Con Stough from the Center for Human Psychopharmacology at Swinburne University in Australia.

Hans Vriens, Chief Innovation Officer at Barry Callebaut: "This is the first time that science has positively linked consumption of high flavanol cocoa and chocolate products from Barry Callebaut to improved brain performance. When consumed regularly, the brain is able to complete memory tasks with less effort."

Three groups of people with different cocoa flavanol intake over 30 days

Sixty-three individuals between the ages of 40 and 65 were observed in a randomized, controlled, double-blind study over a sample period of 30 days. They were divided up into three test groups and consumed a prescribed drink daily. The composition of the chocolate drink varied with regard to the proportion of cocoa flavanols they each contained: For group 1 the cocoa drink contained 10 g of dark high flavanol chocolate (corresponds to 500 mg cocoa flavanols), for the second group 10 g of conventional dark chocolate (corresponds to 250 mg of cocoa flavanols) and for the control group a drink with 10 g of dark chocolate that contained hardly any cocoa flavanols. During the sample period the test subjects were not allowed to consume products containing caffeine, flavonoid-rich fruits or an excess of alcohol so as not to influence the results of the study.

CT scans showed less stressed brains after regular intake of cocoa flavanols

As the basis for the experiment, the Steady State Visually-Evoked Potential method (SSVEP) was used to measure human brain activity. In order to compare brain activities, on the first and on the 30th day computer-tomography (CT) brain scans of the test subjects were made while participants solved tasks dealing with spatial working memory. Spatial working



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memory describes the ability to remember, for instance, the location where an object appeared and also to recall a series of earlier locations of other objects.

The results of the study show that the brains of individuals who consumed the cocoa drink with a medium or a high proportion of cocoa flavanols were less strained than those in the control group without cocoa flavanols. Differences in the accuracy or the reaction times of the test subjects in solving the task were not ascertained between the various groups. This means that Barry Callebaut's ACTICOA™ chocolate lowered stress levels in the brain after consumption and allowed the test subjects to achieve the same performance with lower resource usage.

Cocoa flavanols – phytonutrients with positive side effects

Cocoa flavanols belong to the flavonoids or the polyphenols, a group of secondary phytonutrients, and are found for instance in plants, fruit and also in cocoa beans. When consumed, cocoa flavanols have widely varying positive effects on human health. However, during the manufacturing process of chocolate, cocoa flavanols tend to be destroyed. Barry Callebaut developed a special manufacturing method named ACTICOA™. The result: The products are among the foods richest in cocoa flavanols currently available in the market. Barry Callebaut's ACTICOA™ chocolate can easily be recognized by its embossed ACTICOA™ logo.

An abstract of the full study can be downloaded here:

<http://www.ncbi.nlm.nih.gov/pubmed?term=Camfield%20cocoa%20flavanols>

Barry Callebaut (www.barry-callebaut.com):

With annual sales of about CHF 4.6 billion (EUR 3.6 billion/USD 5.0 billion) for fiscal year 2010/11, Zurich-based Barry Callebaut is the world's leading manufacturer of high-quality cocoa and chocolate – from the cocoa bean to the finished chocolate product. Barry Callebaut is present in 27 countries, operates around 40 production facilities and employs a diverse and dedicated workforce of about 6,000 people. Barry Callebaut serves the entire food industry focusing on industrial food manufacturers, artisans and professional users of chocolate (such as chocolatiers, pastry chefs or bakers), the latter with its two global brands Callebaut® and Cacao Barry®. Barry Callebaut is the global leader in cocoa and chocolate innovations and provides a comprehensive range of services in the fields of product development, processing, training and marketing. Cost leadership is another important reason why global as well as local food manufacturers work together with Barry Callebaut. Through its broad range of sustainability initiatives and research activities, the company works with farmers, farmer organizations and other partners to help ensure future supplies of cocoa and improve farmer livelihoods.

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