

Vegan Milk Chocolates Alternatives

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Introduction

Milk chocolates are the most popular type of chocolates. The market share of dark chocolates is only around 10-15%. On the other hand, the food patterns of consumers is changing during the last years. Intolerances against milk components such as proteins or lactose is one topic, the pure relinquishment of animal products is another topic for the request on products without milk. Yet the taste and especially the melting behavior of milk chocolates is desired also in pure vegan alternatives. Beside tending a consumer trend, vegan products also possess the effect of being more sustainable by having a smaller carbon and water footprint.

Common vegan replacers for milk powder

A closer look on the recipes of vegan chocolates available on the market shows, that milk powders are replaced by products already known as fresh milk replacers. These are the mainly water free powders of rice milk, soy milk or lupine milk.

Milk fat is responsible for the soft texture and lower melting temperatures of milk chocolates. To get the same effects in the vegan alternative products, one has to use other vegetable fats which dilute the crystal structure of cocoa butter or are incompatible to the cocoa butter crystals. Common replacers are hazelnut, almond, coconut or hemp oil.

New challenges with vegan chocolate alternatives

New raw materials always give new challenges for the production and processes. Questions may arise on different process steps of chocolate production:

- **Grinding:**

Do grinding parameters have to be changed to get a good particle size distribution? Does every vegan alternative plant material behave like milk powder particles? Is roller milling still possible or does one need other grinding technologies?

- **Conching:**

What are good conching parameters (temperature, time, energy input, humidity) for vegan chocolate alternatives? Do higher conching times and temperatures affect the oxidative stability of the products?

- **Tempering, Crystallization and Cooling:**

What are the right tempering and cooling parameters for these products? How good is the crystallization and the crystal network? What is the solid fat content and melting stability of these products? Is the melting profile the same as for milk chocolate?

- **Stability:**

How is oxidative stability affected by processes and raw material quality? How stable are these "chocolates" against fat bloom?

- **Other Questions:**

How can a contamination between vegan and non-vegan products be avoided? What are further possible raw materials? How can the product line be broadened to filled products? How stable are the chocolates against fat migration? Are there other advantages of vegan products (healthier, less fat, less sugar)?

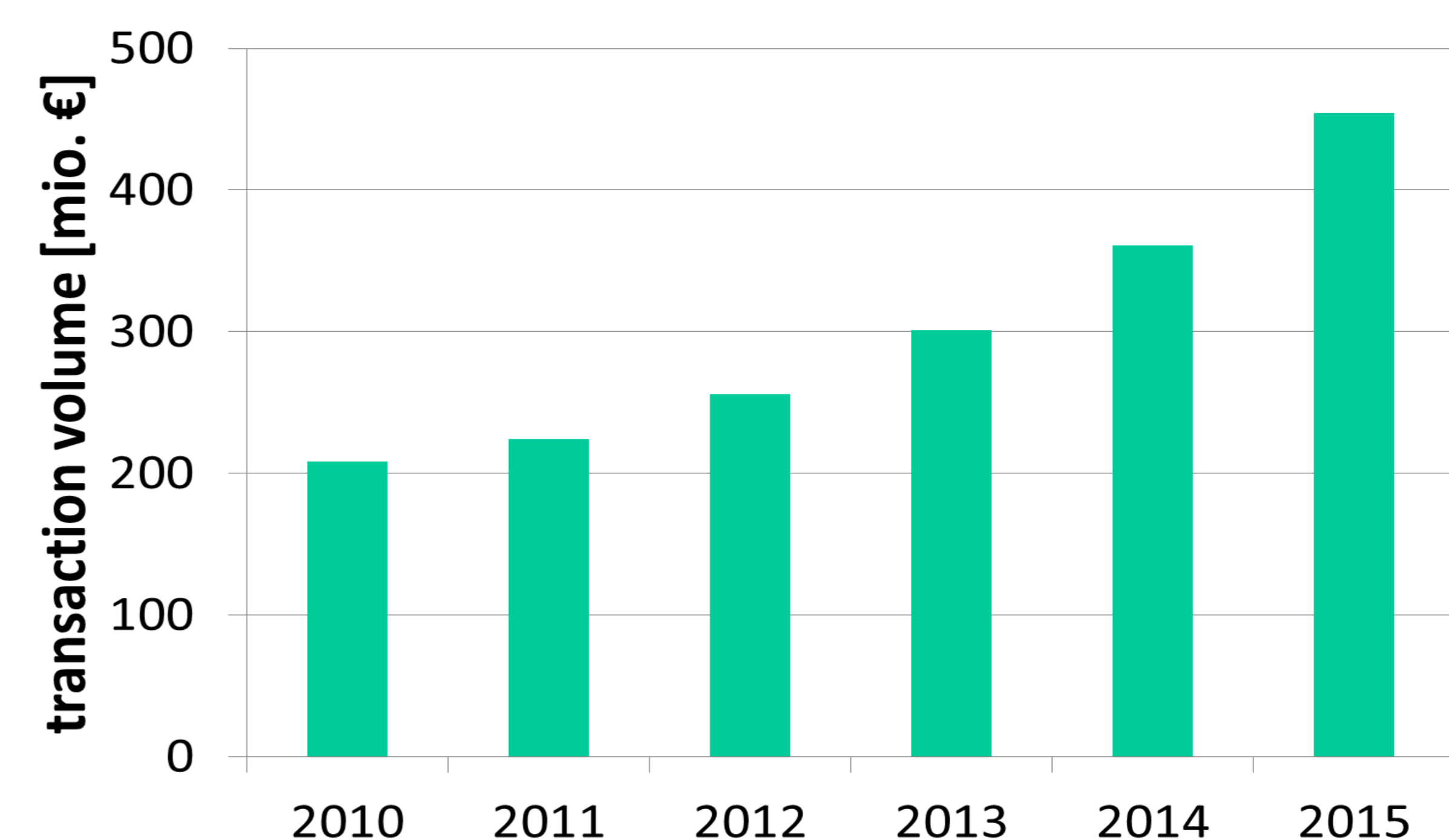


Fig. 1: Transaction of vegan and vegetarian food in Germany between 2010 and 2015

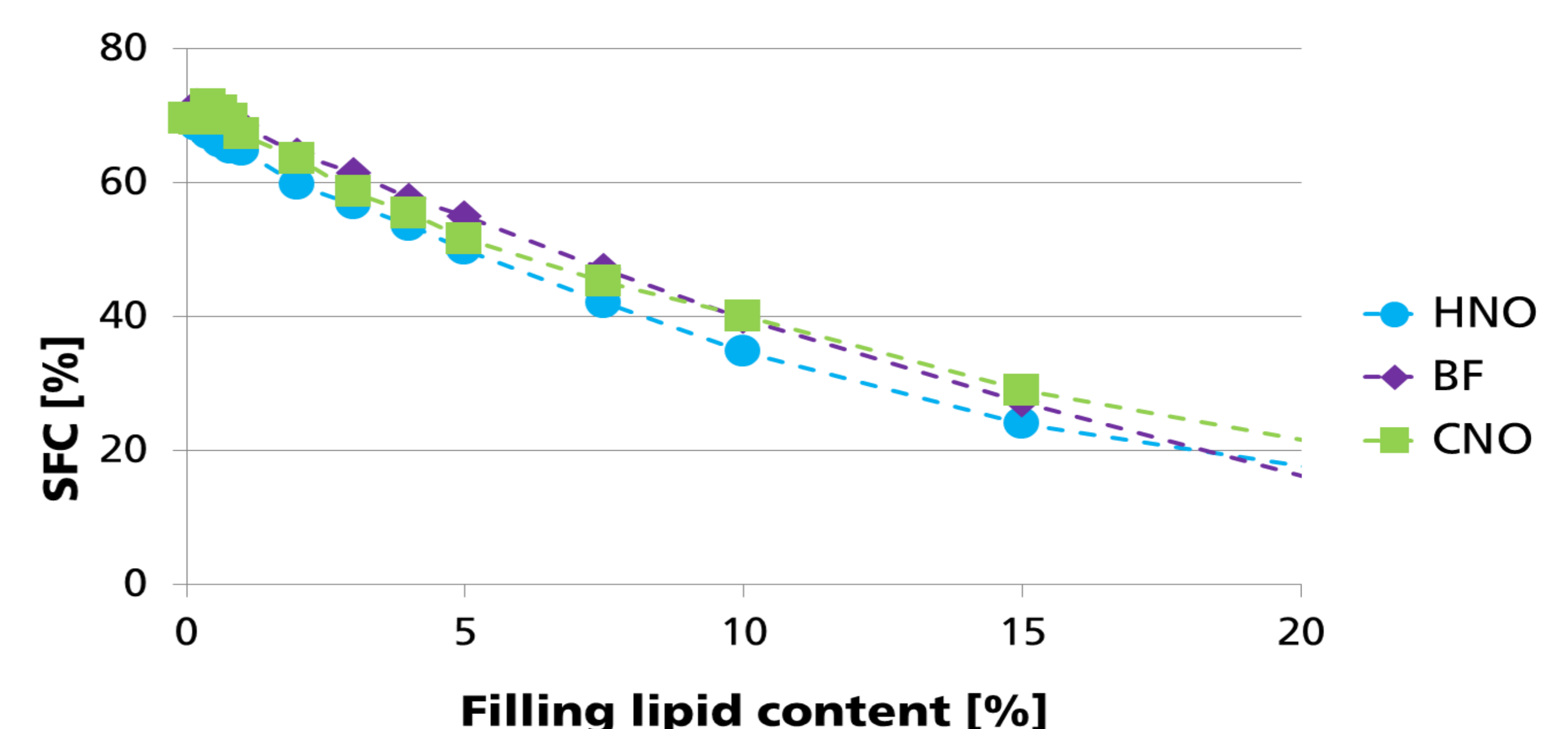


Fig. 2: Decreasing SFC of dark chocolate mixed with hazelnut oil (HNO), butter fat (BF) or coconut oil (CNO)