

Defining Cold Brew Coffee Through Extraction



Cold brew and nitro cold brew are just emerging in many markets such as Europe.

Cold brew is not necessarily a cold beverage, it may be served cold or hot, but its most popular iteration is cold. It is important to differentiate between cold brew coffee and iced coffee, which is a coffee beverage that is served cold (hot brewed coffees that are cooled) as there is some confusion, particularly in regions where cold brew coffee is just emerging. For example, unlike North America, many commercially available “cold brew products” in Europe are milk-mixed flavoured drinks rather than coffee beverages based only on water and roasted coffee. There is clearly a need to define “real” cold brews and to distinguish them from fake cold brew (“called brews”) because any coffee beverage based on hot extracted coffee should not be considered a cold brew.

The authors believe that a good criterion to differentiate cold brew from other beverages is the extraction of roasted coffee at temperatures below body temperature, most typically at fridge or room temperatures. Cold brew can be extracted by all the three methods used for hot coffee. It can be extracted:

The term “cold brew” describes a method for preparing a coffee beverage in the form of a certain extraction style. Several cold brew methods such as drip filtration, full immersion, or cold press are available but the key element is the water, which may be cold or room temperature, but never hot.

By Dr Steffen Schwarz,
Dirk W Lachenmeier, Linda Claassen

- as “cold drip” (typically with iced water) like a filtration method,
- by lixiviation or immersion (ie, grounds in a pot sipping in water, with or without stirring or other techniques such as ultrasonication),
- by cold press (under or over pressure).

The extraction time of cold brew will be much longer than for hot brews, but also largely depends on the selected temperature. The minimum would be two hours (at 20°C). It is important to adjust the time/temperature equilibrium to not over or under extract the cold brew.

The extraction of cold brew coffee generally depends on several factors including the coffee, roasting, dosage (brew ratio), water temperature ▶



Cold drip is just one method of preparing cold brew coffee.

and composition, turbulence (ie, increasing the water contact into the coffee grounds by stirring), grinding level (particle size and surface, dust) and time. From these parameters, the roasting profile is specifically important as it influences the acidity that may be extracted out of the beans. Grinding surface is also extremely important (ie, extraction is influenced if the surface is irregular or round).

Considering the authors' experience, 70 percent extraction (ie, 70 percent in relation to the total extractable/soluble amount) may be a good starting point for cold brew coffee recipe development to achieve a balanced product. This derives from experience considering all aspects, including the risk of contamination (ie avoidance of too long times), and the flavour. In other words, an extraction must be found that pulls out the flavour while avoiding contamination. It will always depend on all the parameters and their interactions.

When measuring extraction value, there will probably be a certain corridor, where a good extraction is achieved. Increased agitation will be faster, cooler temperatures will be slower, and all these effects will add up. Not all the soluble compounds should be extracted, but just enough to get a good taste while minimising the

risk for contamination. This is also known from hot extractions such as espresso, where an over extraction also leads to undesirable taste profiles.

Limiting the Extraction Percentage

To achieve the highest possible extraction, such as 100 percent, is specifically not desirable in the specialty coffee field. There is no need to spoil the beverage by getting "everything out." It is better to waste a little bit of coffee, especially the part with the bad flavours inside. There might be an ideal point, certainly below 100 percent, where all the desirable flavours are retained but the undesirable flavours are not yet extracted. This point must be investigated individually in an iterative process considering the equipment and all the multivariate influencing factors mentioned. This will ultimately ensure a good and consistent product.

Using an online questionnaire some initial insights of typical cold brew preparation methods at consumer, commercial and industrial settings were gained. Out of 125 participants in the survey, there was an almost equal distribution between the different cold brew systems (ie, drip method, commercial systems, French press, mixing in various containers, etc) with a slight preference (34 percent) of immersion in containers and filtration afterwards. The applied brew ratios were similarly diverse, with a majority of participants preferring 80-100 g/L. For water quality, soft or medium hard water is preferred. The most preferred extraction temperature is 8°C followed by 20°C. The average brewing time was 16 hours. Medium roast with coarse grinding degree is preferred.

As cold brew is just emerging in Europe, we are currently undertaking many experiments, some of which may have deterred the first-time consumer from ever trying cold brew again, as we have detected many over extracted, extremely bitter, and sometimes over-stored and microbiologically spoiled cold brews on the market. It is to be hoped that experiments and increased experience will lead to better quality products as already may be found on the markets in Asia and the US.

For additional insights, readers may reference the abstract:

www.preprints.org/manuscript/202007.0076/v1. 📄

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