Gin: traditional production versus modern techniques

Vacuum distilled Gin with Rotavapor® R-300, R-220 Pro

Gin is an old medicine as well as a trendy liquor. The Juniper flavored spirit has been in existence for hundreds of years. In recent years gin has experienced a renaissance. It has become one of the trendiest spirits. We find the traditional famous gins on the market as well as gins with completely different flavor profiles and distillation techniques.

1. What is gin

Gin is made of a tasteless base spirit (often made from grain), natural ingredients that are flavoring the spirit (called botanicals) and water to dilute the gin after distillation. What all gins have in common is the predominant juniper flavor. Other frequently used botanicals are coriander, citrus fruits, cardamom, and pepper. Most gins contain six to ten botanicals.
Gin can be made by steeping the botanicals in the base spirit for up to 48 hours, before distilling it. Another traditional method to produce gin is the vapour infusion of botanicals. The botanicals are placed in a basket above the spirit. The alcohol vapour will then be infused with the botanicals. This method gives a gentler flavour, compared to the method when the botanicals are in direct contact with the base spirit.

2. Traditional distillation

Traditionally the spirit is distilled in a copper still. The still is heated with steam. As soon as the boiling point of the base spirit is reached (78 °C) it starts to evaporate and rise. Most distillation apparatus have different steps. By regulation of those steps, the distillation process can be influenced. In the picture bellow we can see a mobile distillation wagon, those were used in Switzerland over many years to distill fruit spirits directly on the farms.

3. Vacum distillation with Rotavapor®

A new method used for gin distillation originally comes from pharmaceutical laboratories. It's the so called vacuum distillation method, also called cold-distillation. With this method the distillation of the botanical infused gin takes place in a vacuum. The advantage of this technique is, that we can reduce the boiling point of the alcohol. Normally alcohol boils at 78 °C, with the vacuum we can reduce the boiling temperature to about 30 °C. But why should we do that? If we lower the boiling point of the ethanol, we apply less heat to the botanicals. Some of the compounds and flavours in the plants are heat sensitive, with traditional distillation we will loose some of those compounds. Vacuum distillation gives us the possibility to change the flavour profile of the gin by changing the boiling temperature. Another possibility is to use a diluted base spirit to infuse with botanicals. In vacuum distillation we are able to distill not only the ethanol, but also the water and the water soluble substances from the botanicals. This will result in a different and more intense taste of the gin.

Rotavapor® R-220 Pro

4. Voice of experts

Together with the local distillery "Edelbrennerei Brunschwiler" in Switzerland, we have performed some experiments by vacuum distillation of gin.
We distilled a gin produced by steeping botanicals in the base spirit with a Rotavapor® at two different temperatures. In parallel the same gin was distilled with the traditional method.

The results of these experiments showed, that the tastes of all three gins were different. By changing the boiling temperature at the vacuum distillation, also the flavour and taste of the gin changed.

The different gins were tasted by different experts in the Swiss gin industry. The results showed that the taste of the vacuum distilled gin were fresher and lighter.

5. References

[1] www.ginvodka.org/history/ginProduction.asp
[2] https://flaviar.com/blog/how-gin-is-made
[3] http://www.ginfoundry.com/gin/oxley-gin/