

VITAMIN ANALYSIS OF HOPS AND DRY HOPPED BEERS

| TECHNICAL SUPPORT |

Hops are known as the spice of beer and traditionally used as a minor ingredient in the brewing of beer. Perhaps because of its low use rate, very little has been reported in the literature regarding what vitamins are present in hops.

Recently we analyzed the vitamin composition of the hop variety, Super Galena. That analysis showed this hop to contain B-carotene, a precursor to vitamin A at a concentration of 1,880 IU/100g, which is equivalent to 47 ug/100 g. Hops also contained Choline, a water soluble vitamin-like essential nutrient responsible for synthesis of phospholipids in cell membranes, methyl metabolism, and acetylcholine synthesis and it was present at 111 mg/100g.

Analysis also showed 0.199 mg/100g Folic Acid (Vitamin B9), 4.43 mg/100 g Niacin (Vitamin B3), 0.135 mg/100 g Thiamine Hydrochloride (Vitamin B1), <0.440 ug/100 g Vitamin B12, 0.737 mg/100 g Riboflavin (Vitamin B2), 2.35 mg/100 g Pantothenic acid (Vitamin B5), and 0.996 mg/100 g Pyridoxine (Vitamin B6) giving a total Vitamin B concentration of about 88 mg/kg. There was 77.8 IU/100 g Cholecalciferol (Vitamin D3), 18.7 IU/100 g Tocopherols (Total Vitamin E).

Because vitamins A, D, and E are fat soluble, it is unlikely much of these vitamins will dissolve into beer, however, the water-soluble B Vitamins and Choline will. Many craft brewers dry hop with as much as 2 pounds of hop per barrel of beer, sometimes even more. To see if this high level of hop usage could significantly affect the concentration of B vitamins and Choline in beer, we used the above vitamin concentrations and calculated that dry hopping could increase certain vitamins in beer, by 7 to 36% (assuming a 100% utilization). Practical experiences will follow.

VITAMIN CONCENTRATION IN BEER AND ITS POSSIBLE INCREASE BY DRY HOPPING AT 2 LBS/BBL

Vitamins	Pilsner/Lager Beer (1)	2 lbs/bbl	% Increase
Thiamin B1	0.10 mg/L	+ 0.010 mg/L	10%
Riboflavin B2	0.30 mg/L	+ 0.057 mg/L	19%
Niacin B3	6.50 mg/L	+ 0.416 mg/L	6%
Panthenic Acid B5	0.60 mg/L	+ 0.220 mg/L	36%
Pyridoxine B6	0.40 mg/L	+ 0.080 mg/L	20%
Folic Acid	0.05 mg/L	+ 0.019 mg/L	36%
B12	0.50 ug/L	+ 0.040 ug/L	8%
Choline	105.00 mg/L	+ 8.000 mg/L	7%

(1) Beer and Health www.beerandhealth.eu/beer-and-health/components-in-beer/
Table 2. The Average composition of regular pilsner/lager beer in Europe

To learn more please do not hesitate to contact us.

Simon H. Steiner, Hopfen, GmbH *S.S. Steiner, Inc.*

Newsletter, August 2018

SAVE THE DATE!

Tour 2018

HOPSTEINERFORUM

DATES & LOCATIONS

Forum Hallertau – Sept. 13th 2018

Meeting Point: Simon H. Steiner, Hopfen, GmbH in Mainburg
Language: german/english
Deadline: Sept. 03rd 2018

Forum Bludenz – Oct. 11th 2018

Brauerei Fohrenburg GmbH & Co KG, Fohrenburgstr. 5, A-6700 Bludenz
Language: german
Deadline: Sept. 29th 2018

Forum Dresden – Oct. 11th 2018

Ballhaus Watzke GmbH, Leipziger Str. 132, 01127 Dresden
Language: german
Deadline: Sept. 29th 2018

Forum Regensburg – Oct. 25th 2018

Birretta Bier Bar, Ostengasse 13, 93047 Regensburg
Language: german
Deadline: Oct. 18th 2018

**Registration: forum@hopsteiner.de
(or Phone +49 (0) 8751-8605-0)**

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