

# Haskap makes a great a food dye!

## Part 2: Mixing Haskap with other juices By Dr. Bob Bors

‘Combined’ Haskap juice was prepared as described in part one of this series. It was added to the 5 juices shown in figure 1. Commonly, apple, pear or grape juices are used for blending with other juices for high-end juice mixes. Those 3 juices don’t have a strong flavour or colour but can be sweet enough that no sugar needs to be added. Water and sugar or corn syrup are commonly used for lower cost juices. Juice from other fruits that perhaps cost more or that don’t have enough sugar can be blended and the labels can still claim 100% fruit juice.

Pineapple and lemon may be added to mixed juices but are usually not the main base for fruit mixes. Orange juice is sold mostly by itself but may have tropical fruits added like mango and pineapple. I was especially curious what the colour would be when added to the orange coloured juices and if the flavours would blend well.

Haskap juice would be a good candidate for blending with other juices. It will be more costly to obtain, especially during early years of it coming on the market. Haskap juice from 150 selections in our breeding program averaged 15.8° Brix but varied from 10.1 ° to 23.1 ° Brix in 2013. Total acidity averaged 1.8 meq but the lowest was half as acid and the highest twice as acid. So the ‘average ‘ haskap juice would tend to be almost sweet enough (18 to 22° Brix would be better) and a bit too acidic. In part one of this series it was demonstrated that 5% haskap juice makes a vibrant red solution. The purpose of this study was to determine what a combined juice would look like if one wanted to taste haskap. Also we wanted to know which type of juice was most likely to be best for blending.



Figure 1. Fruit juices investigated for blending with Haskap Juice.

Initially we mixed 1 part haskap juice with 9 parts other juices (10% haskap juice) as shown in figure 2. Haskap juice overwhelmed the orange colours present in orange juice, apple juice and pineapple juice resulting in a very deep rich burgundy colour. All 10% haskap juices appeared very similar. All were much more intensely coloured than any juice on the market.

At 10% concentration, only the haskap/grape blend tasted like haskap. Perhaps this shouldn't be too surprising since grape juice is rather mild compared to other juices.

More haskap juice was added to make a 20% haskap blends. A noticeable difference between the different concentrations was that the foam on the top of the drinks became a more intense red at 20%. But the juice at 10% was so dark anyway that it was hard to see an increase in colour.



Figure 2. Colour of haskap juice at 10 and 20% when added to other juices. The colour of this photo is best seen on a computer monitor. If this photo were printed it would likely look darker than reality.

At 20%, flavours became more interesting:

**Orange juice and lemonade:** The citrus flavours overwhelmed the flavour of haskap. I have heard of haskap jam makers adding a touch of lemon to enhance the flavour, but adding a touch of haskap to lemonade only adds colour.

**Apple Juice:** At 20% haskap flavour came through but at 10% it didn't.

**Pineapple Juice:** Haskap flavour seemed altered when added to pineapple. The resulting juice didn't taste like either. Although I thought it tasted pleasant but unusual, the students didn't like it. It reminded me of a time when I had some unusual tasting hybrid strawberries. I used to have visitors try them saying "Try those unusual strawberries and tell me what you think". Almost all visitors ate only one strawberry, made a funny face and said they didn't like them. But one day a visiting farmer spoke out "it tastes like strawberries with coconut". At that point all the other visitors kept eating the berries and said they were great. Thereafter I told visitors try those strawberries, they taste a bit like coconuts...people loved them! (By the way those strawberries were hybrids made by traditional means not GMO) Lesson learned: the public wants some familiarity of flavour and not something completely new. Haskap flavour has something familiar about it and something new and people love the basic flavour. But adding pineapple to it may be too new a flavour. However this was just a quick look at blending with pineapple. Someone may want to investigate it more thoroughly using different concentrations.

**Grape Juice:** Grape juice at 20% had richer flavour than at 10% but both had the taste of haskap. If one really wanted to use the least amount of haskap juice, grape would be the juice of choice.

**What we didn't try:** We didn't try pear juice because that was not available at the grocery store. Possible a good juice to combine would be Saskatoon juice, although that choice would be much more expensive than apple pear or grape. Saskatoons, like apples and pears, are pome fruits and its juice has a mild flavour. Although purple on the outside Saskatoons are not purple inside unless cooked. Raw pressed Saskatoons give a yellow brown juice very similar in colour to apple juice.

**Prairie grower note:** There are no large growers of pears or grapes in the Canadian prairie. I don't think any of the prairie pear varieties would be suitable for large scale production. The grape variety 'Valiant' is hardy enough but growing grapes is quite different from other fruit crops and may require much more expertise to work with. The best alternative could be to grow apples and/or Saskatoons if a 100% prairie grown juice were to be manufactured.

Undoubtable there is much research that could be done with haskap in combinations with other juices. It could also be marketed by itself, which is being done in Japan (See figure 3). The Japanese manufactures were clearly at consumers wanting healthy foods. Many of the haskap candies and pastries in Japan seemed to have a low haskap content, but not the juices shown below.

It should be noted that in Japan preservatives are not allowed, so if one is thinking about export consider developing a product without artificial preservatives. As I wrote this article I was curious if there was a price tag on my original bottle of juice (the one on the right in the photo). I found the juice in the back of the fridge where it has been sitting for 6 years! Sorry no price tag. However the bottle had been open and left 1/3<sup>rd</sup> full all those years ago yet no mold! Don't get too excited, the longevity of that juice may be more due to the properties of concentrated sugar than preservative effects of haskap.

Haskap does mold when left in the refrigerator especially if the fruit is damaged and has juice coming out of it.

I tested the 'golden remedy' juice and found it was 61.2 ° Brix! No wonder it was well preserved (note: Brix is a measurement of soluble solids which is roughly equivalent to % sugar but starches could also be included). I became inspired to measure Corn Syrup and found it was 78.0 ° Brix. Based on these haskap dyeing experiments, that haskap juice/syrup could have been 10 to 20% haskap juice added to corn syrup. The concept of making a syrup or a concentrated haskap juice that needs water added or would both have high enough sugar content to not need preservatives.



Figure 3. Some haskap juices sold in Japan. These juices were rather concentrated. The juice with the large berries was lightly sweetened and very pleasant. I didn't try the can, maybe it was carbonated? The juice in the red bottle was very thick sweet and syrupy. I wonder if they were trying to mimic cough syrup or if it was a concentrate? In Canada and the USA I don't think one could get away with a claim of "Eternal remedy for the eternal youth and longevity". Could one put something like that on a label if was destined only for export?

Haskap juice is certainly an area that need more investigation. Finding the right combination of flavours is both an art and a science. Research in this area is often top secret recipes for company products. For newer growers interested in value added products it would be worthwhile to experiment with recipes while the orchard is young and producing a small crop so as to be prepared when full production comes.