

Comparative study of coffee substitutes

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SUMMARY

Coffee is one of the most consumed drink in the world. However besides its positive effects some of its nutritional attribute is not fulfilling everyone requirements. The market of coffee substitutes therefore is a fast growing market.

In our research we compare substitutes which can be found on the market, and we made our own samples using barley as base material. The existing solutions to replace coffee are based either on using tubers as chicory or cereals as barley (or malted barley).

We used non-malted barley and we roasted it to different degrees, using surface response method.

First, the 10.15 and 20-min ground roasted samples were cooked in a Klarstein Aromatica coffee machine, but this did not yield adequate results.

A French Press coffee machine was then used. Roasted and ground samples were used or 10, 15 and 20 minutes, from which 40.0 g and 300 cm³ of hot water were measured after several preliminary experiments. This process has already brought an enjoyable taste, a color close to coffee.

Using a Konica Minolta CR-310 colorimeter, we measured the color characteristics of the roasted samples. During the measurement, the flours as well as the brewed beverages were examined.

A sample of 10.0 g was weighed for the grinds and 40.0 g for the beverages. PH measurements were performed using the TESTO 206-pH2 starter set. For each sample, 5-5 parallel measurements were performed.

We also made a sensory comparison between the barley coffees we made and the commercially available coffee substitutes. The classification of barley coffee has yielded good results, but it can be noted that the addition of sugar and milk increases the enjoyment value, which is worth considering.

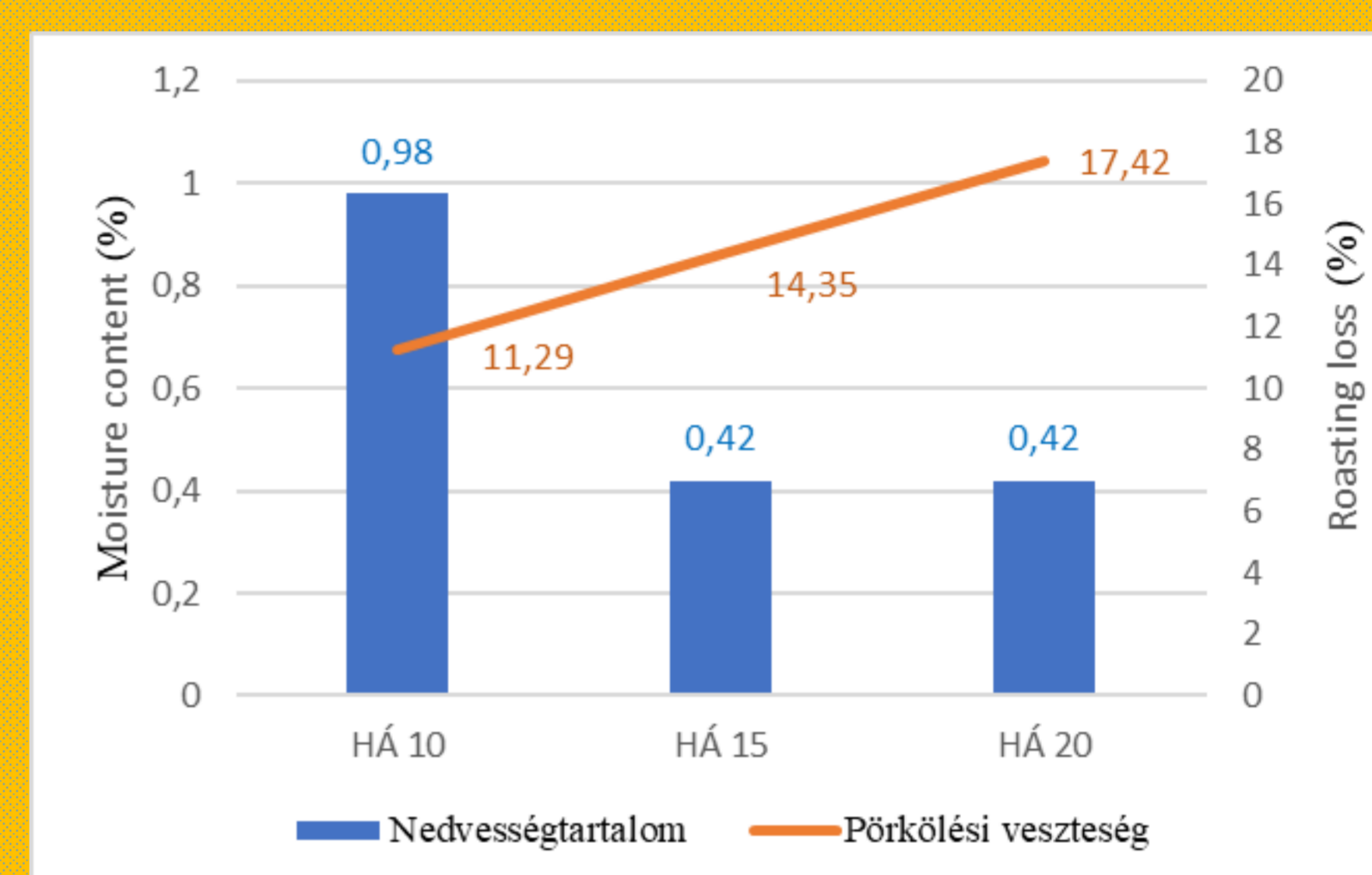
1. INTRODUCTION

Coffee is one of the most consumed drink in the world. However besides its positive effects some of its nutritional attribute is not fulfilling everyone requirements. The market of coffee substitutes therefore is a fast growing market.

In our research we compare substitutes which can be found on the market, and we made our own samples using barley as base material. The existing solutions to replace coffee are based either on using tubers as chicory or cereals as barley (or malted barley).



Gene Café coffee roaster



Moisture content and roasting loss of hulled barley



Roaste barley and their grits

3. RESULTS

Using a Konica Minolta CR-310 colorimeter, we measured the color characteristics of the roasted samples. During the measurement, the flours as well as the brewed beverages were examined.

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French Press Coffee Machine

2. MATERIALS AND METHODS

We used non-malted barley and we roasted it to different degrees, using surface response method.

Physico-chemical parameters (eg. color, pH) and organoleptic parameters (as odor, taste..etc) were identified of drinks made of the roasted barley samples. We also included samples from the market in our comparison.

Although we got promising results, the best coffee substitute is yet to be found.

Barley samples were roasted at 250°C for 10, 15, 20 minutes. In each case, the roasting process was followed by a rest period of 15 minutes. During this time, the samples were cooled to 60 °C.

The grinding of the samples was designed so as not to cause excessive heating. Each sample was ground for 2 minutes using a Dyras CFFG-I 10 Finesto coffee grinder. Coffee drinks were prepared in two different ways.

First, the 10.15 and 20-min ground roasted samples were cooked in a Klarstein Aromatica coffee machine, but this did not yield adequate results.

A French Press coffee machine was then used. Roasted and ground samples were used or 10, 15 and 20 minutes, from which 40.0 g and 300 cm³ of hot water were measured after several preliminary experiments. This process has already brought an enjoyable taste, a color close to coffee.

CONCLUSIONS

We also made a sensory comparison between the barley coffees we made and the commercially available coffee substitutes. The classification of barley coffee has yielded good results, but it can be noted that the addition of sugar and milk increases the enjoyment value, which is worth considering. Most cafes do not consume coffee "empty" but sweeten it (with sugar, honey, sugar substitutes) and silk it with milk or cream.

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