Practice abstract #4.10

Hybrid burgers of meat and texturized vegetal proteins

AUTHOR(S)
Pere Gou, Filiberto Sánchez, Grau Matas

CONTACT
pere.gou@irta.cat

KEY WORDS
Hybrid burger, texturized vegetal protein, protein quality and efficiency

www.cropdiva.eu
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CHALLENGE

In developed countries, part of the population is starting to look for alternative protein sources that are nutritive and with less environmental impact than meat products. Hybrid meat products are blends of meat and plant-based ingredients that could bridge the gap for consumers who want to reduce their meat intake, without sacrificing the taste, convenience and familiarity of traditional processed meat products. Burger is one of the most consumed meat products. Therefore, the formulation of hybrid burgers with meat and legume-based proteins with high nutritional and organoleptic properties is expected to have an important impact on the sustainability of the diet.

SOLUTION

To achieve a correct organoleptic quality of the hybrid burger and an improved nutritional profile, 50% of beef was substituted by a texturized vegetal protein (TVP) obtained from pea (80%) and faba bean (20%).

The protein quality considering the amino acids profile recommended by FAO is estimated by the Digestible Indispensable Amino Acid Score (DIAAS), but the net protein utilization should also be considered to estimate the environmental impact.

OUTCOME

Rehydrated TVPs were mixed with minced beef and the rest of ingredients and formatted into burgers shape. The hybrid burgers had a similar texture to the beef burgers, but they had a slight legume flavor (not unpleasant), dominating the faba bean over the pea flavor.

The protein quality of the hybrid burger is lower than the beef burger (DIAAS=131%), but it still apports to the diet a protein with high quality (DIAAS =112%) that can complement proteins of lower quality. A burger with 100% of protein coming from Faba bean:Pea TVP would have the lowest protein quality (DIAAS=72%). In addition, the net protein utilization for synthesis is expected to be more efficient with hybrid burgers (77-81%) than with beef burgers (74-79%) or burgers with 100% of protein coming from Faba bean:Pea TVP, due to its more balanced indispensable amino acid content with respect the reference protein pattern recommended by FAO.

PRACTICAL RECOMMENDATIONS

The specific flavor of the hybrid burger, dominated by the faba bean flavor, differentiates it from the traditional meat burger and expands the range of burgers offered, but consumer acceptance must be assessed before commercialization to identify the appropriate market niche.

It should be highlighted the nutritional and environmental advantages of the hybrid burger compared to the 100% beef or 100% vegetal.

About CROPDIVA

CROPDIVA wants to put 6 underused arable crops back in the fields: oats, hull-less barley for human consumption, triticale, buckwheat, faba beans and lupins. 27 European partners are joining forces to enhance agrobiodiversity in Europe. They will achieve this by focusing on crop diversity and creating local value chains. The project is running from September 2021 to August 2025.

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement N°1010000847