

WHERE DOES THE SO-CALLED BAD "TASTE" OF PULSES COME FROM?

Pulses have many nutritional and environmental benefits and yet they remain relatively uncommon on our plates. Among the obstacles to their consumption, these plant-based proteins are often criticised for having a "bad taste".

Recently, CSGA researchers studied the molecules which could be at the origin of these bad "tastes" in order to provide solutions to improve the acceptability of pulses. To do so, they reviewed the scientific literature on this topic, analysing 64 articles published between 1969 and 2021.



Credits photos : iStock©

This work enabled the researchers to identify two categories of compounds. The first category includes sapid molecules that cause pulses' bitter taste and/or astringency. The second includes all the undesirable volatile molecules characterised by green, pea, metallic, mouldy and pungent aromas.

These unpleasant odorous molecules are mainly produced from free fatty acids by an enzyme present in the plant called lipoxygenase, or by auto-oxidation in the presence of high temperature or light. Free amino acids are also degraded via secondary metabolism or if unwanted microorganisms are present in the seeds. These reactions can occur at various stages and with varying degrees of intensity depending on environmental conditions - in the field during plant development (insect attack, water stress, frost, etc.), during storage (lack of temperature control or too much light) or during seed processing (hulling, grinding, production of protein-rich fractions).

This work opens up very interesting prospects for improving the 'taste' of pulses. For example, enhanced control of seed storage conditions (low temperature, absence of light) or innovations in the transformation process (germination, fermentation) are potential ways of reconciling consumers with pulses.

Contact

Christian Salles, christian.salles@inrae.fr

To know more

Karolkowski A, Guichard E, Briand L and Salles C (2021). Volatile compounds in pulses: a review. *Foods*, 10, 3140. <https://doi.org/10.3390/foods10123140>.

Key-words

Plant-based protein; pulses; acceptability; taste; aroma; oxidation