Mayonnaise is an oil-in-water emulsion made with vegetable oil, egg yolk, vinegar, salt and other minor ingredients. Its structural and rheological behaviour is of outstanding importance for the sensory properties and perceived texture as well as for the physical stability. Olive oil, despite its use as seasoning, is increasingly added in formulated and processed foods due to its peculiar sensory, nutritional and functional properties. However, its natural composition comprises endogenous molecules (e.g. free fatty acids, phospholipids and polyphenols) that, due to their surface activity, may affect the formation of oil/water interfaces and the stability of dispersed emulsified systems.

The aim of this work was thus to study the effect of olive polyphenolic compounds on the physical and rheological properties of mayonnaises made with extra virgin olive oils (EVOO). To this purpose, different EVOOs were selected according to their polyphenolic content along with other vegetable oils (peanut, sunflower) taken as reference. Mayonnaises were characterized by colour measurements, back extrusion test, rheological evaluations and sensory analyses. The samples produced with EVOO showed the lowest textural indices when compared to sunflower or peanut oils; similar results were obtained for the elastic and viscous modulus and the loss factor (\(\tan \delta\)) resulted to be inversely related to the content in polyphenolic compounds. EVOOs mayonnaises presented a peculiar sensory characterization; nonetheless highest polyphenols contents in the oils caused a lower overall acceptability among the assessors. Olive oil could represent a valid ingredient in the formulation of mayonnaises as long as the effect of high polyphenolic content on their structure and rheology is taken into consideration.