

# Physicochemical Characterization of the *Espresso* Coffee Foam

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## SUMMARY

The foam layer of small bubbles with a particular tiger-tail pattern on top of the small cup volume beverage, make *espresso* coffee very different from the other pure coffee based beverages. Conditions normally used to brew *espresso* coffee enhance several surface tension-related phenomena such as foam formation and stabilisation. Any error in grinding or in percolating, in temperature or extraction level is immediately denounced by the colour, the volume, the texture and the persistence of foam. Moreover, it has also to be stressed that the ingredients, including water, may strongly affect the whole set of foam characteristics. The importance of the foam as a very positive connotate in recognising quality of the *espresso* coffee brew may be witnessed by the term “*crema*” used in Italy to name the foamy layer. In fact, the term derives from the identical name of a dessert preparation highly appreciated by people and it is often used as synonymous of a “delicious food texture”. Several studies have been aimed at elucidating *espresso* coffee surfactants and surface properties, however, little is known about foam characteristics and foam formation mechanism. This is particularly true from a quantitative point of view and it is mainly due to the experimental difficulties which have to be overcome to study this peculiar food foam. The present study reports on the physicochemical characterization of the *espresso* coffee foam. Several experimental approaches have been followed in order to obtain quantitative data. The role played by carbon dioxide release in *espresso* coffee foam is discussed in detail and emphasized.