

## 3.5

# Evolution of bolus granulometry and bioaccessibility of proteins during mastication of chopped and non-chopped beef meat

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Micronutrients deficiencies (MNDs) affect 30% of the world population, the majority of which is due to iron deficiency. Another health concern, affecting especially old people, is sarcopenia. The latter and MNDs are due to or worsened with malnutrition and are treated by intakes of the required nutrients. Eating meat is the simplest way to insure these intakes, as red meat contains vitamins, proteins and heme iron. People with impaired mastication often reduce their meat consumption or swallow large particles, because of their difficulty to chew such food. Consequently, they lower their iron, proteins and vitamins intakes, increasing the risk of sarcopenia or anemia. Swallowing large particles may also reduce the nutrients bioavailability, although it is not yet established. This work aimed at studying the release of bioaccessible proteins of chopped and non-chopped beef meat during in vitro mastication supplemented with human saliva, using the AM2 masticator.

The AM2 masticator was set up with the physiological parameters of healthy human mastication. For both meat products, the mastication was stopped at 20, 50 and 100% of its progression. Three repetitions were made for each step, and the bolus granulometry (D50 value) and the proteins global concentrations were assessed.

The granulometry of both meat textures boli decreased as mastication progressed. The proteins concentration increased in the non-chopped meat boli. However, it remained constant in the chopped meat boli to a level corresponding to that of a non-chopped meat boli at 99% of mastication progression. This study suggested that chopping meat for people with impaired mastication could compensate for global protein release. However, further studies are needed to evaluate the impact of the difference in the kinetic release from both meat textures on proteins bioavailability. This work was supported by the French AlimaSSenS project (ANR-14-CE20-0003).