

# Production of Sustainable Foods for Consumers with Restricted Choices

Rania Harastani (R.harastani@lboro.ac.uk)

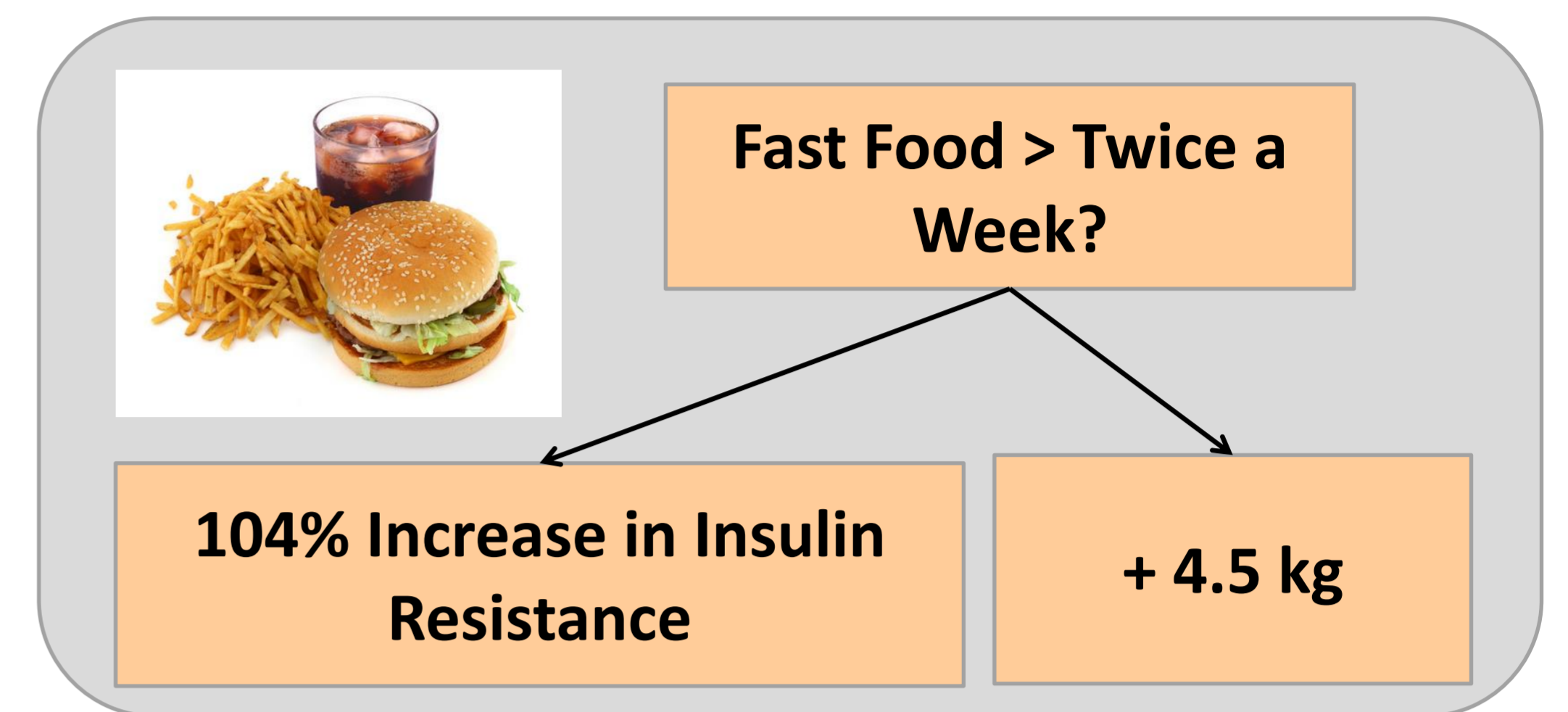
Centre for SMART, Loughborough University (smart@lboro.ac.uk)

## 1- Research Aim

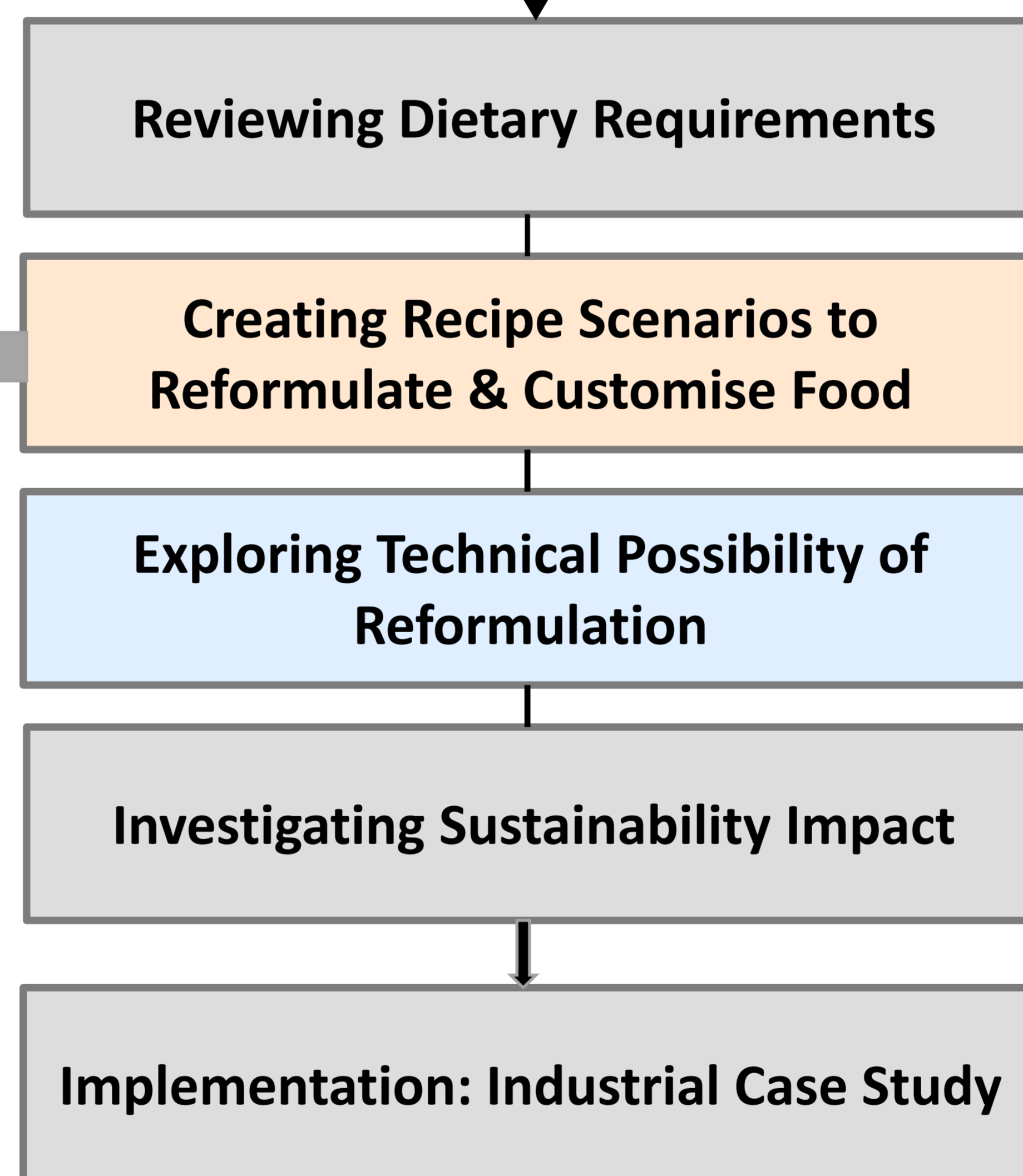
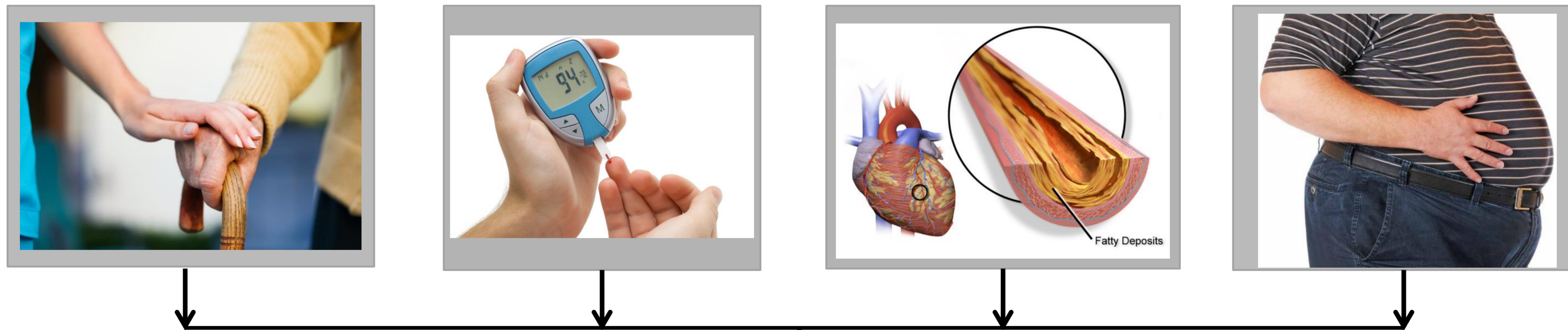
To investigate how industrialised popular ready to eat foods can be reformulated in order to create customised healthier versions for people with restricted choices due to age, obesity, diabetes or cardiovascular disease. The required production flexibility, additional environmental impact, retail and distribution challenges, as well as, consumer acceptability will be explored.

## 2- Research Justification

- One out of four adults in the UK consume prepared meals at least 3-5 times every week.
- A substantial amount of available meals in the market are unhealthy fast/take-away foods, which expose consumers to higher risk of diet related illnesses.
- The risk of Non-Communicable Diseases (NCDs) and malnutrition in elderly is correlated with unhealthy diets.
- The research will investigate different scenarios to provide new knowledge and know how to produce customised convenient healthy foods for people with restricted food choices.



## 3- Methodology



### Product Challenges

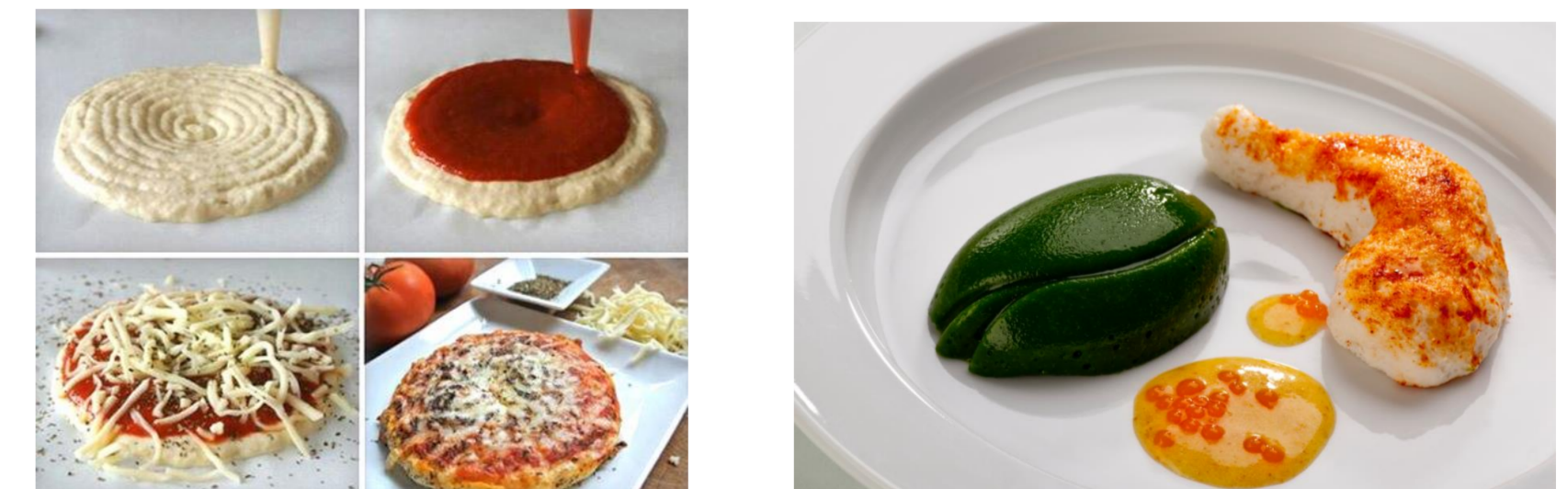
- Flexibility not always possible in large industrial production lines.
- Consumer acceptability (e.g. soups with low salt content might not be well received).
- Technical problems (e.g. sugar reduction could compromise texture, melting point and colour).



### Process Challenges

- Re-designing production lines to achieve food customisation (e.g. personalisation by 3D printing, and creating 3 extruders for 3 different salt concentrations).
- Investigating processes that retain food quality and characteristics (i.e. vitamins & texture).
- Studying processes that require less energy (e.g. Ohmic heating, microwave, radio frequency heating).
- Obtaining longer shelf-life and maintaining fresh nutritious ingredients with minimal processing (e.g. high pressure processing HPP).

### Examples of 3D Printing (Supplements can be added to food blends)



## 4- Concluding Remarks

- Increasing numbers of senior citizens and people with NCDs highlight an urgent need for customised and/or personalised foods specially produced for the specific requirements of these consumers.
- Provision of customised products tailored to people with restricted choices demands process flexibility and re-configurability which are currently not available in food production lines.
- Ability to provide customisable and/or personalised food is a key enabler for a long term viability of future food manufacturing businesses.