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Understanding interactions between caseins and carotenoids at molecular level

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Understanding interactions between caseins and carotenoids at molecular level



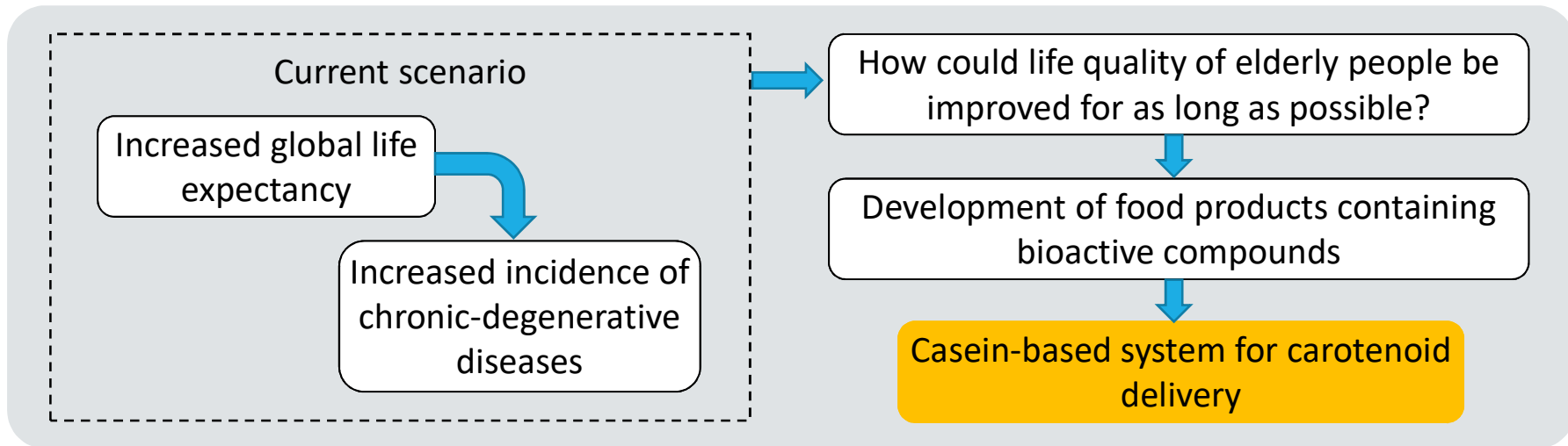
STLOpen Days
19-21 March 2019



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ISF – Saïd BOUHALLAB



Socio-economic context



Carotenoids

- β -Carotene
 - Lutein
- Eye health

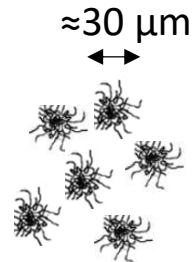


Casein micelle

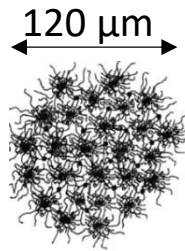
→ Calcium delivery → Prevention of osteoporosis

Scientific context

Sodium caseinate



Casein micelle



Assembly of α s1, α s2, β and κ -caseins

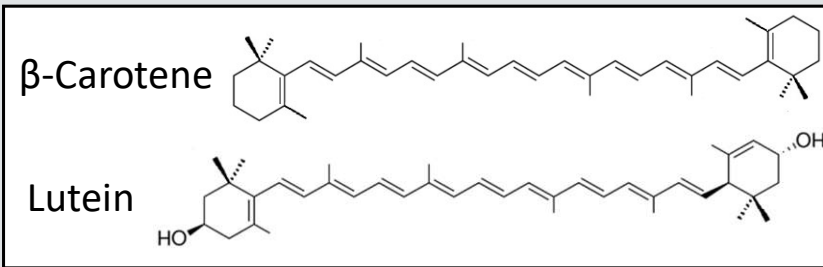
Submicelles in the absence of calcium phosphate

Native assembly of caseins and calcium phosphate

Casein supramolecular structure affects protein/ligand complexation

- Protein/ligand ratio
- Complex stability

Carotenoids

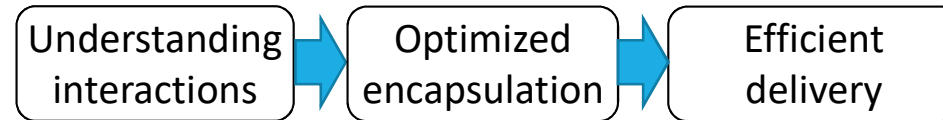


Carotenoid insoluble in water

- Carotenoid polarity influences carotenoid binding to/release from protein-based systems.

Why?
How?

Rationale for research



- How carotenoid polarity and different supramolecular structures of casein affect protein/carotenoid interaction?



1. Evaluation of carotenoid aggregation in hydrophilic environment
2. Thermodynamic characterization of casein/carotenoid complexation
3. Investigation of the competition between β -carotene and lutein for protein binding

Research perspective

- Contribute to future works related to the development of delivery systems of antioxidant compounds using biocompatible ingredients



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