



# MilkQua

<http://www.milkqua.eu>

Milk Quality along the Dairy  
Chain for a Safe and  
Sustainable MILK

## Steering Board September 27<sup>th</sup>-29<sup>th</sup>, 2021

**WP7: Consumer assessment of milk practices  
and studies of sensorial properties and  
consumer acceptance of enriched EOs UHT  
milk**

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**LPAM**



The PRIMA programme is supported under Horizon 2020, the European Union's Framework Programme for Research and Innovation





## Two main objectives

- To assess knowledge, attitude and practice (KAP survey) of Tunisian consumers toward milk and dairy products using e-mail web-based questionnaires as a research tool.
- To appraise the sensory impact and evaluation of EOs or encapsulated EOs incorporation into milk.

**Due date 18 - 30 M**

PRIMA Full Proposal Template Version 0.0 – 14 June 2018



D4.5	Report on the curative effect of EOs against mastitis in small controlled conditions	WP4	IDELE	R	PU	M32
D4.6	Report on the effect of EOs against mastitis (Large scale study, Tunisian Farms)	WP4	ENMV	R	CO	M32
D5.1	A list of bacterial at genus level that are present in faeces and milk of cows fed with different extracts from WP4 and WP5	WP5	UMIL	R	CO	M32
D5.2	The miRNome of milk as related to feeding with different extracts (WP5)	WP5	UMIL	R	CO	M32
D5.3	A list of milk metabolites involved in the immune response which are modified after different extracts regimen (WP5)	WP5	UMIL	R	CO	M32
D5.4	A list of differentially abundant proteins after feeding with different extracts (WP5)	WP5	UMIL	R	CO	M32
D6.1	Comparative efficiency of two strategies of EOs encapsulation	WP6	STLO	DEM	PU	M26
D6.2	Mechanisms of EOs encapsulation and selection of the most stable and efficient one	WP6	LPAM	R	PU	M26
D6.3	Antimicrobial activity of encapsulated EOs	WP6	LPAM	R	PU	M24
D6.4	Nutritional and sensorial properties and characteristics of EOs UHT milk and cheese	WP6	IDELE	DEM	PU	M30
D7.1	Sensorial properties of milk enriched with encapsulated EOs	WP7	LPAM	R	CO	M18
D7.2	Questionnaire establishment on milk consumption	WP7	LPAM	R	PU	M20
D7.3	Validation of the questionnaire	WP7	LPAM	R	PU	M23
D7.4	Data Collection and verification	WP7	LPAM	R	PU	M28
D7.5	Report on consumer survey	WP7	LPAM	R	PU	M30
D8.1	Communication and dissemination materials	WP8	IDELE	R	PU	M12, 24, 36
D8.2	Plans for dissemination and exploitation of the results	WP8	IDELE	R	PU	M12, 24, 36
D8.3	Completed and planned communication activities	WP8	IDELE	R	PU	M12, 24, 36
D8.4	Report on sustainability of MILKQUA project activities and results	WP8	IDELE	R	PU	M36



## Approach and methodology

### Overall

- Development of two kinds of questionnaires
  - ❖ Electronic survey questionnaire with questions in Open Ended Format and Questions in Closed Ended Format
  - ❖ Satisfaction and sensory questionnaire in paper format
    - Administration of the questionnaires
    - Data collection and analysis
    - Data report

**500 participants answered a web-based survey and data were collected on 2020**



## Tasks

### 1. KAP survey of Tunisian consumers toward milk and dairy products

- **Task 1:** Development of the electronic survey questionnaire
- **Task 2:** Identification of the target population (n =500)
- **Task 3:** Evaluation of the validity and reliability of the questionnaire in a pilot study (n =30)
- **Task 4:** Sending the web-based questionnaire via personal e-mail and data collection
- **Task 5:** Data analysis with appropriate tests and report.

### 2. Satisfaction and Sensory evaluation of milk enriched with encapsulated EOs

- **Task 1:** Development of the satisfaction questionnaire
- **Task 2:** Identification of the target consumers (Adults, n =80)
- **Task 3:** Data collection by trained interviewers using interviewer-administered questionnaire
- **Task 4:** Data analysis with appropriate tests
- **Task 5:** Data report on consumer survey .



## **1. KAP survey of Tunisian consumers toward milk and dairy products**

- 💧 For dairy intake, the Semi-quantitative Food Frequency Questionnaire (semi-FFQ) were used to investigate the intake of dairy products in one recent month.
  
- 💧 There were 40 items in this semi-FFQ (Food Frequency Questionnaire):
  - \* 20 items regarding the general characteristics of target population such as sex, age, levels of education, residence.
  - \* 20 attitude items that were developed in this study to investigate different types of dairy product consumption (such as whole-fat milk, low fat milk, skim milk, lactose-reduced milk, formula ?????, Ricotta, Lben, Raieb, etc.), place of purchase, conditions.







# Google Forms

Vous rencontrez des difficultés pour afficher ou envoyer ce formulaire ?

**REPLIR DANS GOOGLE FORMS**

Je vous ai invité à remplir un formulaire :

To assess knowledge, attitude and practice (KAP survey) of Tunisian consumers toward milk and dairy products using e-mail web-based questionnaires as a research tool.

Dans le cadre d'une étude sur les connaissances, les attitudes et les pratiques des tunisiens sur le lait et les produits laitiers, on vous invite à remplir ce formulaire

Continuer »

## To assess knowledge, attitude and practice (KAP survey) of Tunisian consumers toward milk and dairy products using e-mail web-based questionnaires as a research tool.

Dans le cadre d'une étude sur les connaissances, les attitudes et les pratiques des tunisiens sur le lait et les produits laitiers, on vous invite à remplir ce formulaire

**\*Obligatoire**

### Identification:

1. Vous êtes: \*

*Plusieurs réponses possibles.*

- ☐ Homme  
☐ Femme

2. Quel age avez vous? \*

*Plusieurs réponses possibles.*

- ☐ Inférieur à 15 ans  
☐ Entre 15 et 25 ans  
☐ Entre 25 et 40 ans  
☐ Supérieur à 40 ans

3. Votre situation familiale \*

*Plusieurs réponses possibles.*

- ☐ Marié(é)  
☐ Célibataire  
☐ Divorcé(e)

Autre : ☐ \_\_\_\_\_

## 2. Satisfaction and Sensory evaluation of milk enriched with encapsulated EOs

- 💧 Sensory evaluation by using all of 5 sens (taste, smell, sight, touch, hearing) to gather informations
- 💧 Quality: what defects are in this product compared to the ideal? often scored (values vary), may be pass/fail
- 💧 Affective (hedonic) –how much do I like this? (using scale, dislike very much to like very much)
- 💧 Descriptive: how do samples differ in characteristics
- 💧 Discrimination: are these samples the same?–triangle test; duo-trio test



## Ethics

- \* The surveys were carried out in accordance with the ethical principles for medical research involving human subjects
- \* Subjects gave their free informed consent
- \* Data was analyzed anonymously

## Global characteristics of target population

- The sample was split evenly among males (24%) and females (76%)
- Age groups: < 20 years: 11,6%
  - 20-60 years: 75,9%
  - > 60 years: 12,5%

## Global socio-demographic information of target population

- Most respondents lived in urban area (86%)
- Only 14 % in no urban area

## Milk consumption of target population

- Only 78% of the subjects consumed milk daily and 45,5 % of them drank at least 1 cup per day
- The frequency and the quantity of milk consumption were higher in male subjects than female subjects
- The majority of the subjects consumed semi skimmed milk (82,5%) and most of them (88,9%) preferred packet milk to bottled milk

## Reasons of milk consumption

- For good health (69,6%)
- To ovoid osteoporosis (48,5%)
- To ovoid broken bones (28,1%)
- To calm stomach pain (18,9%)
- To get physical improvement
- The majority of the subjects consumed semi skimmed milk (82,5%) and most of them (88,9%) preferred packet milk to bottled milk

## Frequency of milk consumption

- Of the population questioned, 49,3% consumed dairy products other than milk 3-4 times per week, and liquid-type yoghurt (8,5%)
- Lben and Rayeb (fermented products) were the preferred dairy products after yoghurt
- Reasons given for consuming Lben and Rayeb products were: good taste, easy to digest, can be consumed with lunch



## Factors that need to be considered

- Better quality (54%)
- Better taste quality (34,7%)
- Higher nutrition with more vitamins quality (44,9%)
- Better sanitation quality (33,7%)

## How milk is consumed?

- Plain milk consumed as a beverage 79,7% and 59 % mixed with black coffee
- Plain milk added to cereal 12 %
- 99,6 % with sugar (sugared milk)

## Bacterial quality of milk consumed?

- Participants reported that milk cannot contain bacteria (66%) even if it is raw
- No differences between packed and bottled milk
- 57% think that the price of the milk is determinant for consumption
- Only 33,8 % agree with higher price if quality is guaranteed
- **Details of this investigation were send to Latifa**






## 2. Satisfaction and Sensory evaluation of milk enriched with encapsulated EOs

**Concerning the Second Survey, Task 1 to 4 were realized, and now we finalize the last task.**

- **Task 1:** Development of the satisfaction questionnaire
- **Task 2:** Identification of the target consumers (Adults, n =80)
- **Task 3:** Data collection by trained interviewers using interviewer-administered questionnaire
- **Task 4:** Data analysis with appropriate tests
- **Task 5:** Data report on consumer survey .

## 2. Satisfaction and Sensory evaluation of milk enriched with encapsulated EOs

All Steps in the Sensory Evaluation of Milk were realized:

- 💧 Step 1: Look 
- 💧 Step 2: Smell 
- 💧 Step 3: Taste (Evaluate for flavor, texture, sensations) 
- 💧 Step 4: Spit
- 💧 Step 5: Think 
- 💧 Step 6: Score 

## In the future:

**The detailed second survey will be send in october to Latifa after the analysis of the last Task 5: Data report on consumer survey.**

**So I think no delay in WP7. In addition, these results are interesting so we will beginning the redaction of scientific paper in journal with IF,**

**Raja participate at BMAT congress on the results of the first survey.**



## Resources

- 💧 The Sensory Evaluation of Dairy Products Clark, S.; Costello, M.; Drake, M.; Bodyfelt, F. (Eds.), 2nd ed., 2008. Springer Publishing ([www.springer.com](http://www.springer.com))
- 💧 Collegiate Dairy Products Evaluation Contest Score Cards milk, yogurt, ice cream, cottage cheese, cheddar cheese, butter <http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateM&navID=CoachescornerCollegiateDairyProductsEvaluationContest&rightNav1=CoachescornerCollegiateDairyProductsEvaluationContest&topNav=&leftNav=CommodityAreas&page=DairyCoachesCorner&resultType=&acct=dgeninfo>
- 💧 Guidelines for Preventing Off-Flavors and Rancid Flavors in Milk Publication DPC 38. 2008. The Dairy Practices Council, 51 E. Front Street, Suite 2, Keyport, NJ 07735, 732-203-1947, <http://www.dairypc.org>
- 💧 Troubleshooting Milk Flavor Problems <http://extension.psu.edu/animals/dairy/health/nutrition/nutrition-and-feeding/troubleshooting-guides/troubleshooting-milk-flavor-problems>