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National Conference

on

“Processed Foods and Beverages for Health: Beyond Basic Nutrition”

Technical Session – IV

“Traditional Indian Functional Foods”

Milk and Dairy Products

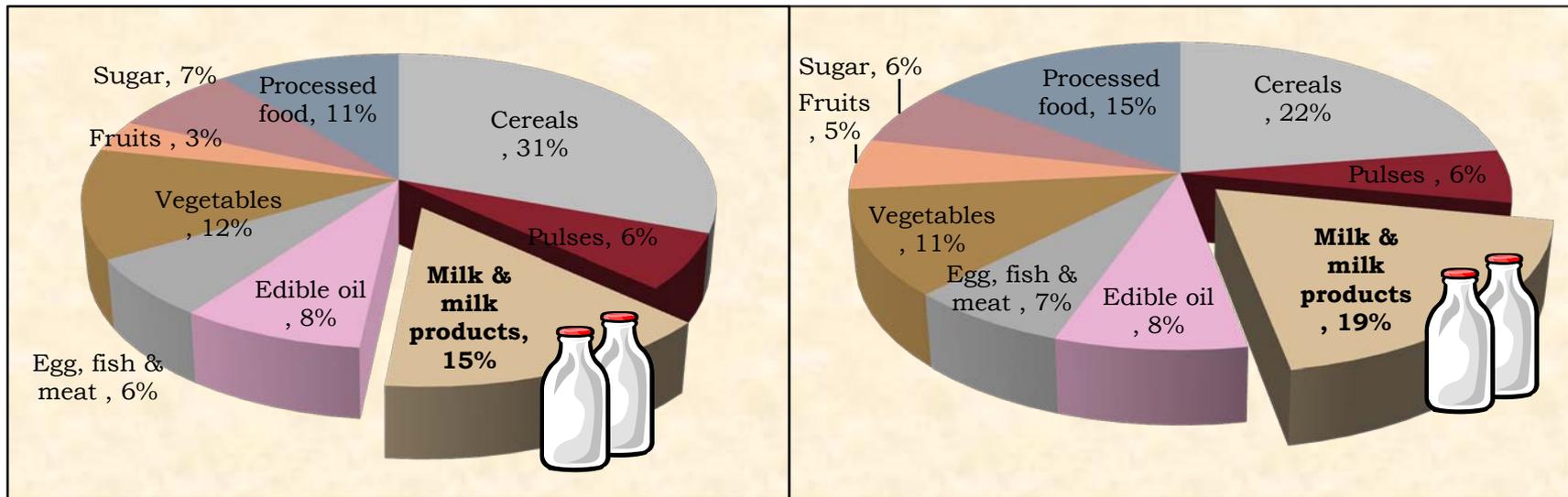
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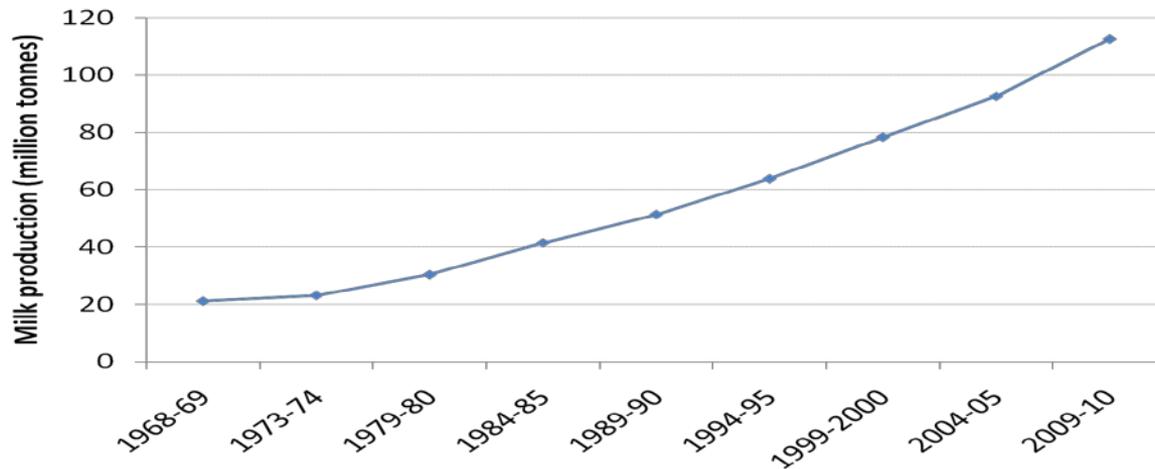


Importance of Milk & Dairy Products in Indian Food Basket



• **Operation Flood**

- Largest agricultural programme in the world using food aid for development
- Transformed the face of India's dairy industry through organising farmers into cooperatives



- **The world's largest Milk producer**
- **Produces 16 % of the world's milk**
- **Milk production in 2009-10 : 112.6 million tonnes**





Demand of Milk & Dairy Products



- Increasing GDP
- Government welfare programmes like NREGA
- Increasing Urbanization
- Emphasis on Healthy Eating
- Shift : CEREALS 
- Projected demand for milk : about **200 million tonnes by 2021-22**
- Milk production is increasing by 3 million tonnes annually
Must henceforth increase by **6 million tonnes annually**



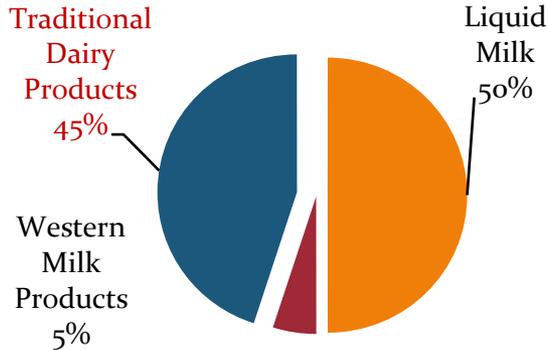
..... to meet the growing demand

- National Dairy Plan to **double** milk production
- Increase in milk production by increasing productivity of our animals
 - scientific approach to feeding and breeding
- Increase of Organized sector's share of marketable surplus
 - from 30 percent to 60 percent
 - improve milk handling & product quality
- Encouragement of milk producer to produce more milk
 - Increasing income from sale of milk
 - Value added product



Milk Utilization Pattern

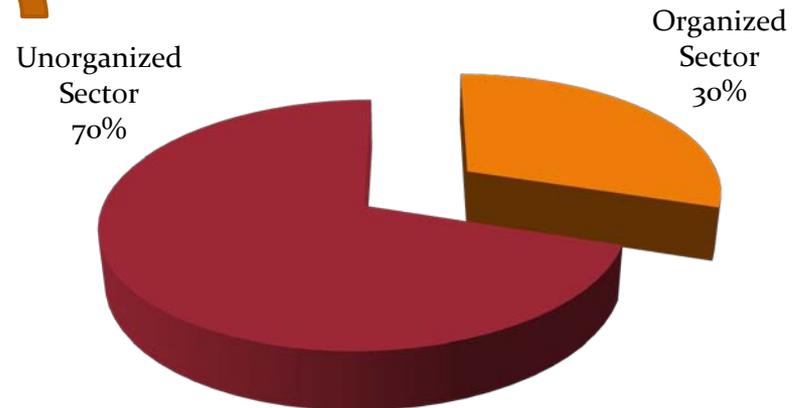
Total Milk Produced



Total Milk Produced



Surplus Milk

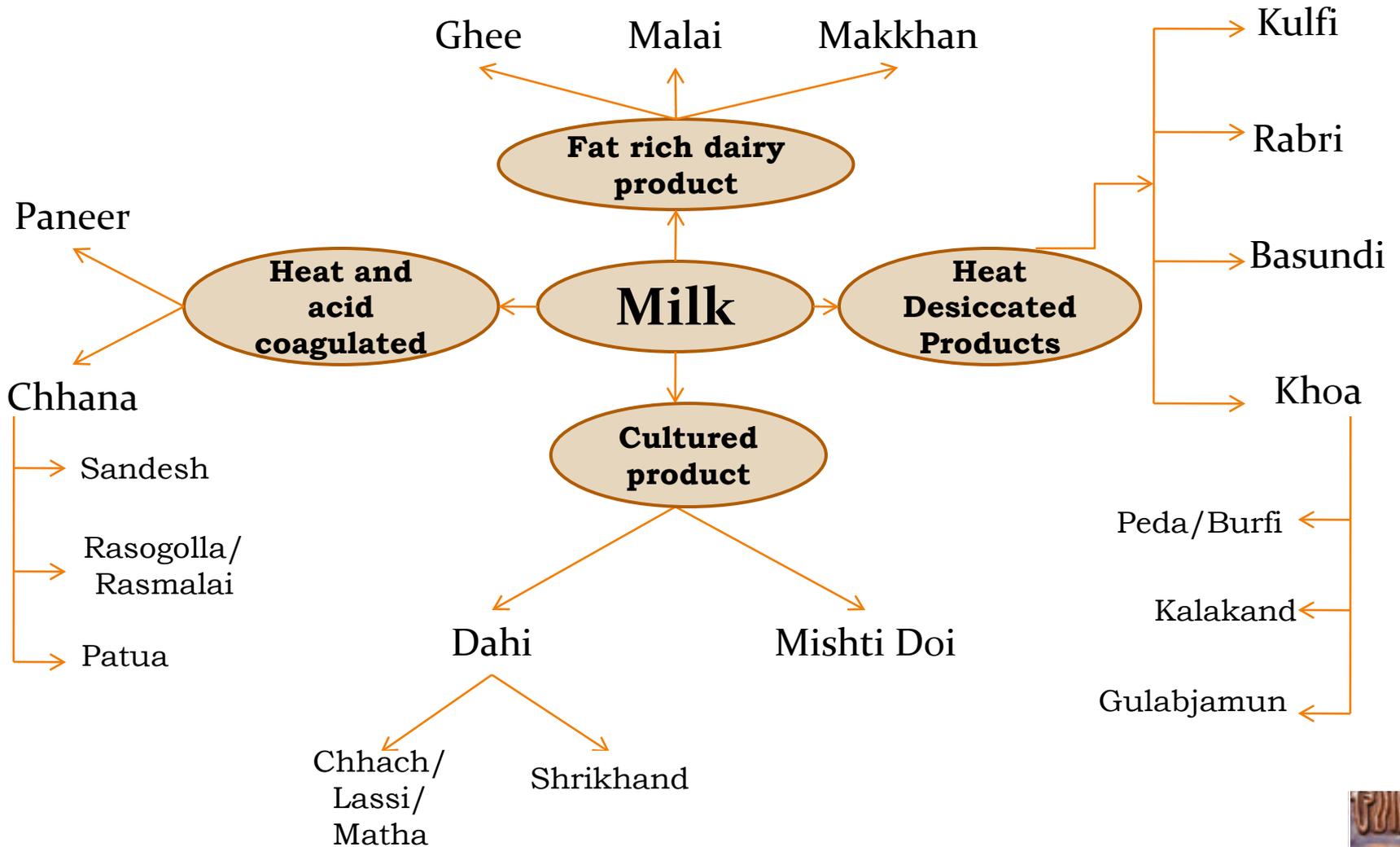


- Dominated by unorganized sector
- Marked with
 - Unhygienic production
 - Energy inefficient process
 - Inconsistent quality
 - Low shelf life

Value addition in Traditional dairy products : Double



Classification of Traditional Indian Dairy Products



NDDB's Contribution towards Organized Manufacturing of Traditional Dairy Products

- To tap the immense potential of organized manufacturing & marketing of **indigenous milk products**
- developed mechanized process and packaging systems
- to produce products with uniform quality and extended shelf life





NDDB's Contribution towards Organized Manufacturing of Traditional Dairy Products

Dahi

- Mother Dairy, Delhi
- Jaipur Dairy
- Sikkim Milk Union
- Himul Dairy
- Ambathur Dairy
- Lucknow Dairy
- Kolhapur Dairy

Lassi/Chhas

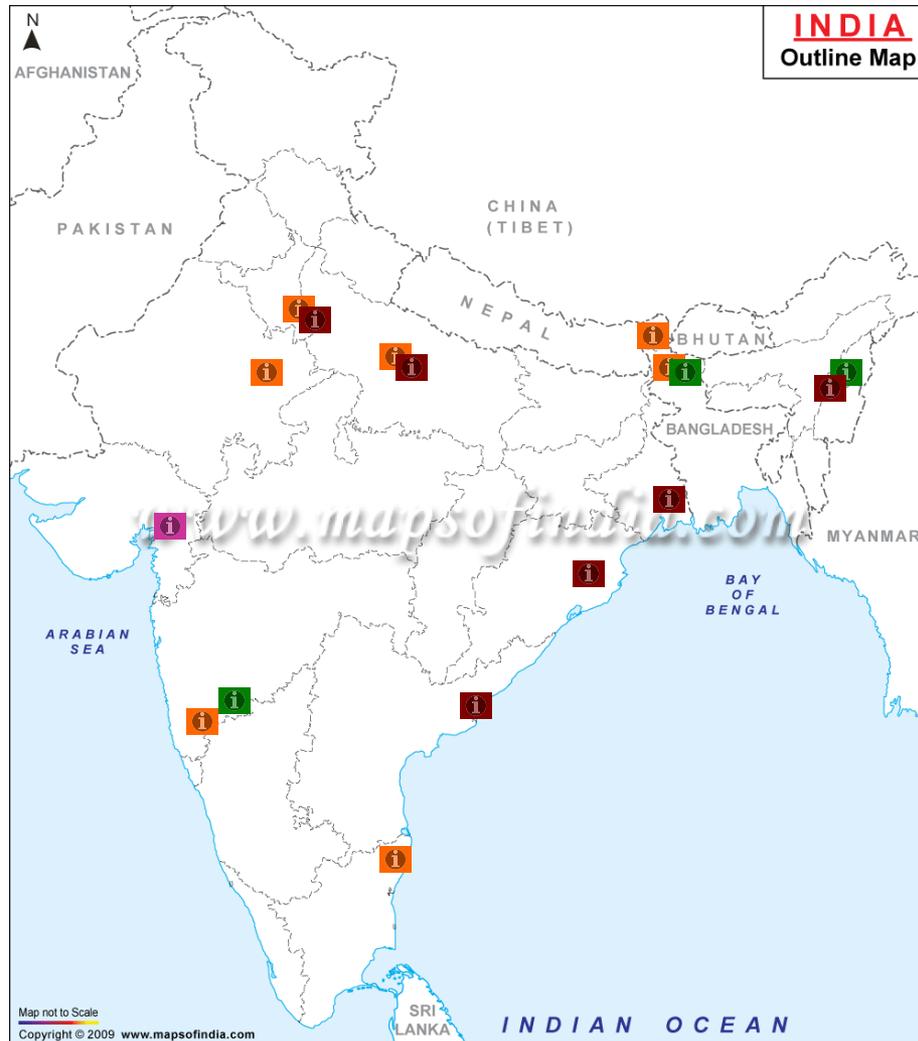
- Dimapur Dairy
- Islampur Dairy
- Himul Dairy

Mishti Doi

- Mother Dairy, Kolkata
- Bhubaneshwar Dairy
- Mother Dairy, Delhi
- Lucknow Dairy
- Dimapur Dairy
- Visakha Dairy

Shrikhand

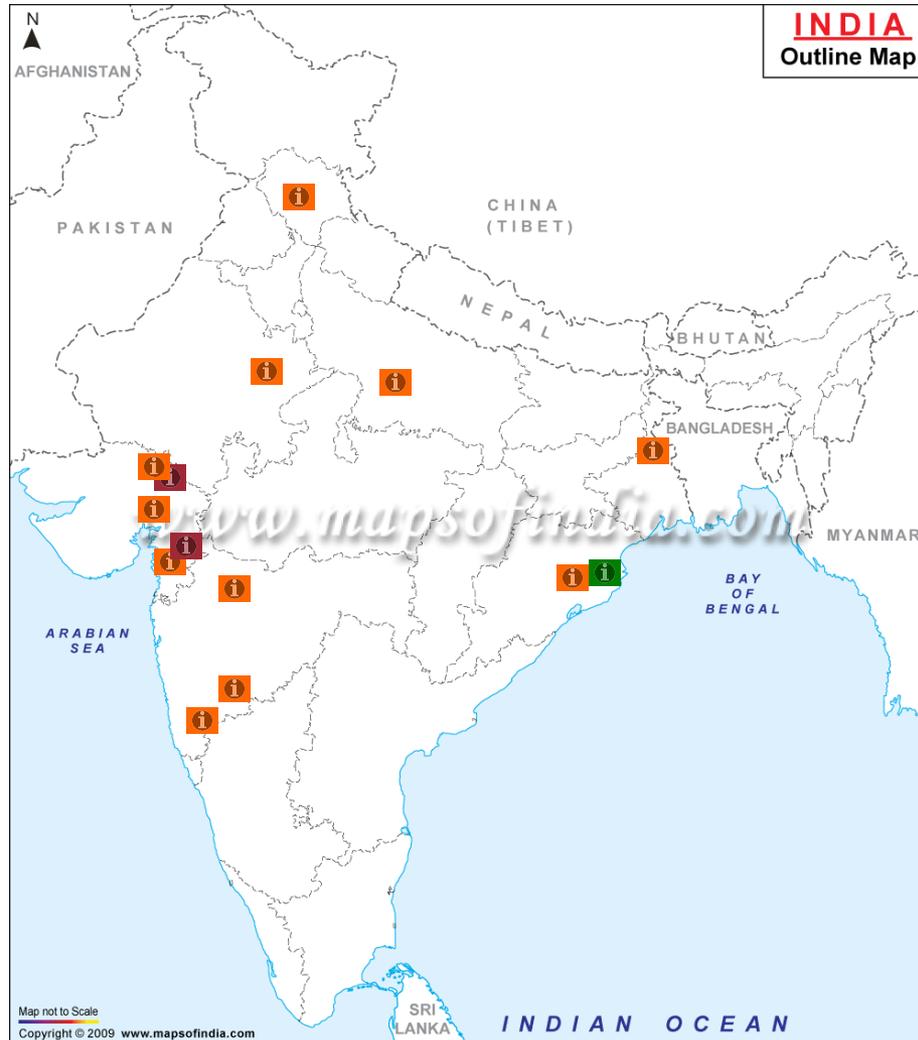
- Sugam Dairy



NDDB's Contribution towards Organized Manufacturing of Traditional Dairy Products

Paneer

- Jaipur Dairy
- Kolhapur Dairy
- Jalgaon Dairy
- Islampur Dairy
- Mandi Dairy
- Bhagirathi Dairy
- Bhubaneswar Dairy
- Vidya Dairy
- Sabar Dairy
- Sumul Dairy
- Kanpur Dairy



Chhana Podo

- Bhubaneswar Dairy

Gulabjamun/Peda/ Khoa & Khoa based Sweets

- Sugam Dairy
- Sumul Dairy



Bioactive Functions Associated with Milk & Milk Products and their Components

- Functional foods :
 - Any food or food ingredient that may provide a health benefit beyond the traditional nutrients that it contains
 - Foods that are consumed as part of normal food pattern
 - have beneficial effects on body functions that go beyond adequate nutritional effects
 - relevant to an improved state of health and well being
 - and/or a reduction of the risk of disease
- Like many foods and their components, milk & dairy products fit this definition



Ayurvedic Perspective of Indian Traditional Milk Products

Milk (*Dugdha*)

- Milk and its byproducts accounted as best among all life-sustaining substances
- Appetizing, Healing wounds & fracture, Increase semen strength, Nourishes *ojas* (vigor of the body)
- Milk is effective in Acidity, Anemia, Diarrhea and Beneficial for nursing mother
- Adjuvant of medicines
- *Rasayana* (immuno-booster) in therapeutic formulations
- *Bhavana* (bio-enhancer to detoxify/increase the therapeutic property of the formulations)



Ayurvedic Perspective of Indian Traditional Milk Products

Ghee (*ghrita*)



- Judicious use of ghee
 - Prolongs life
 - Enables good digestion (stomachic)
 - Promotes intellect, memory, strength and good complexion (emollient)
 - Good for eyes and voice
- Therapeutic values of ghee :
 - Cleanses and heals ulcers
 - Therapeutic qualities used in conditions like Wasting, Fatigue, Skin disorders, Mental diseases & certain types of Fever
 - Helpful in transferring herbal influences to tissues
 - Essential for *snehana* treatment which is done as part of *shodhana* to flush the toxins
 - Best antidote for metal, mineral & herbal poisoning



Ayurvedic Perspective of Indian Traditional Milk Products

Butter (*makkhan*)

- Used in Piles, Chronic dysentery, Anorexia & in Facial paralysis



Curd (*dahi*)

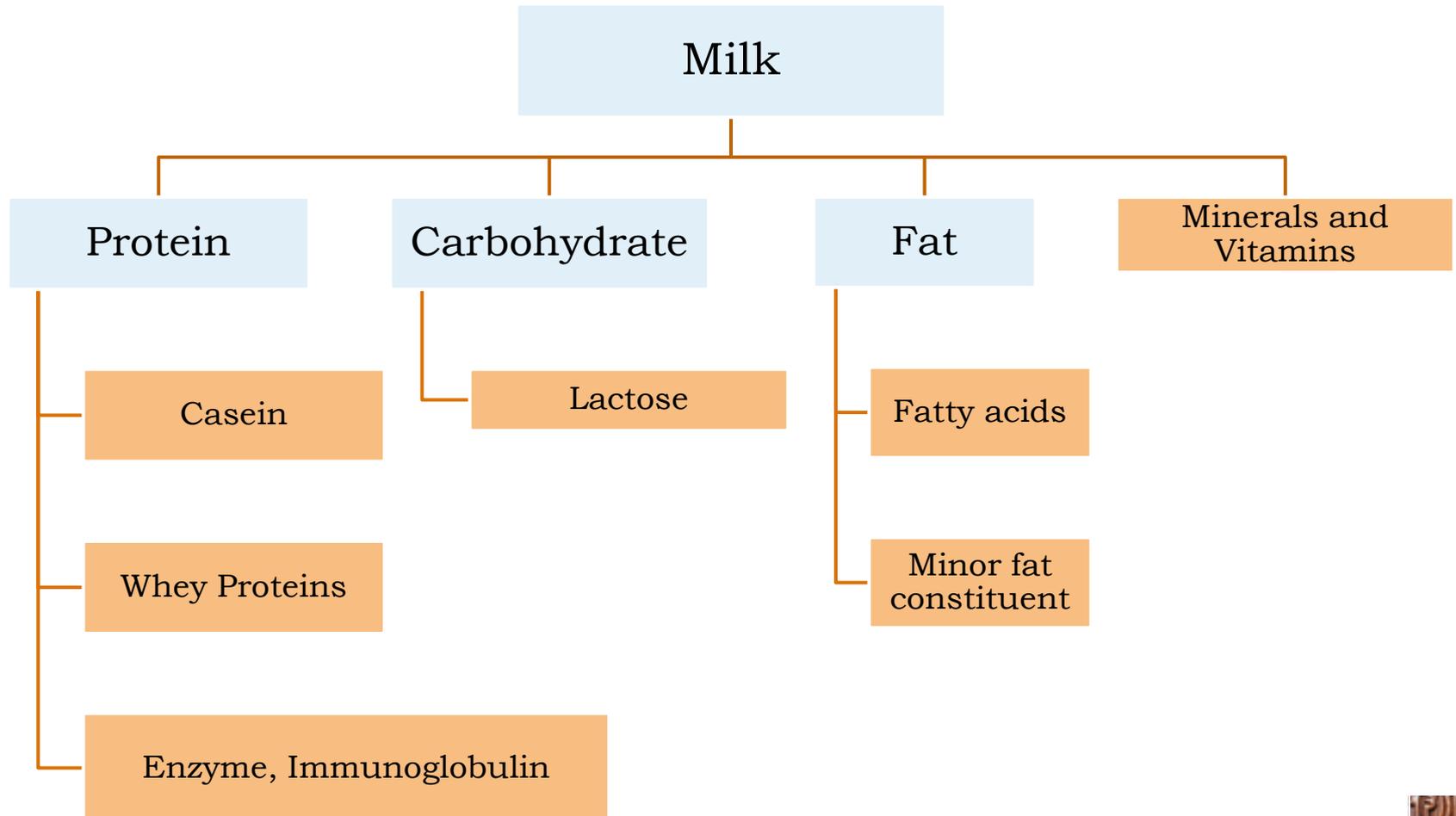
- Appetizing, Digestive & Cooling properties
- Increases adipose tissue, Marrow, Semen strength & Blood

Lassi/Chhach (takra)/Whey (mastu)

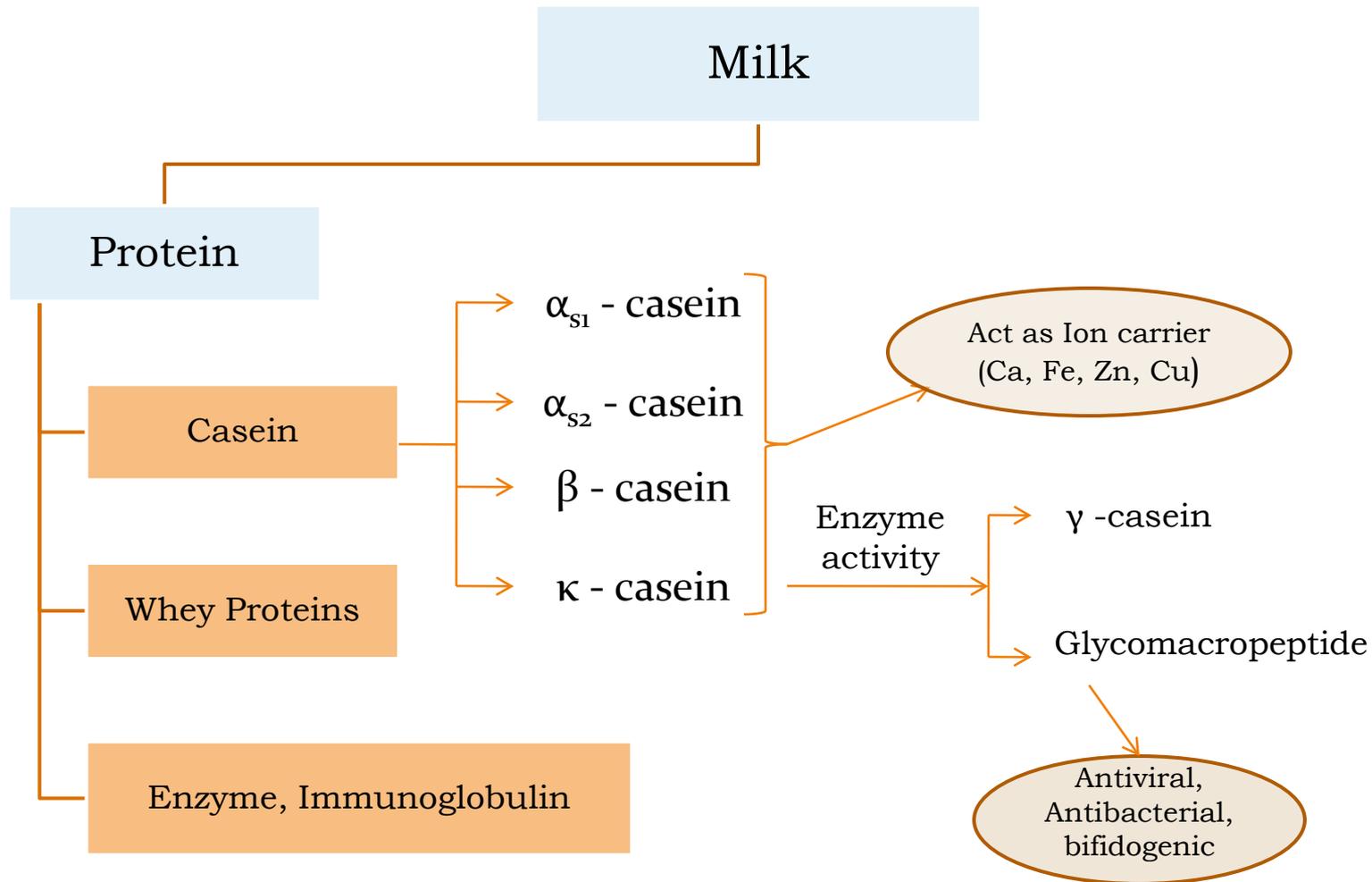
- Reduces Bloating of stomach, Soothes intestines in IBS & helps in Indigestion
- Eases symptoms of Hemorrhoids & Constipation
- Tonic, Stimulant & Invigorating
- *Takra* is effective against Emesis, Piles, Anemia & Obesity



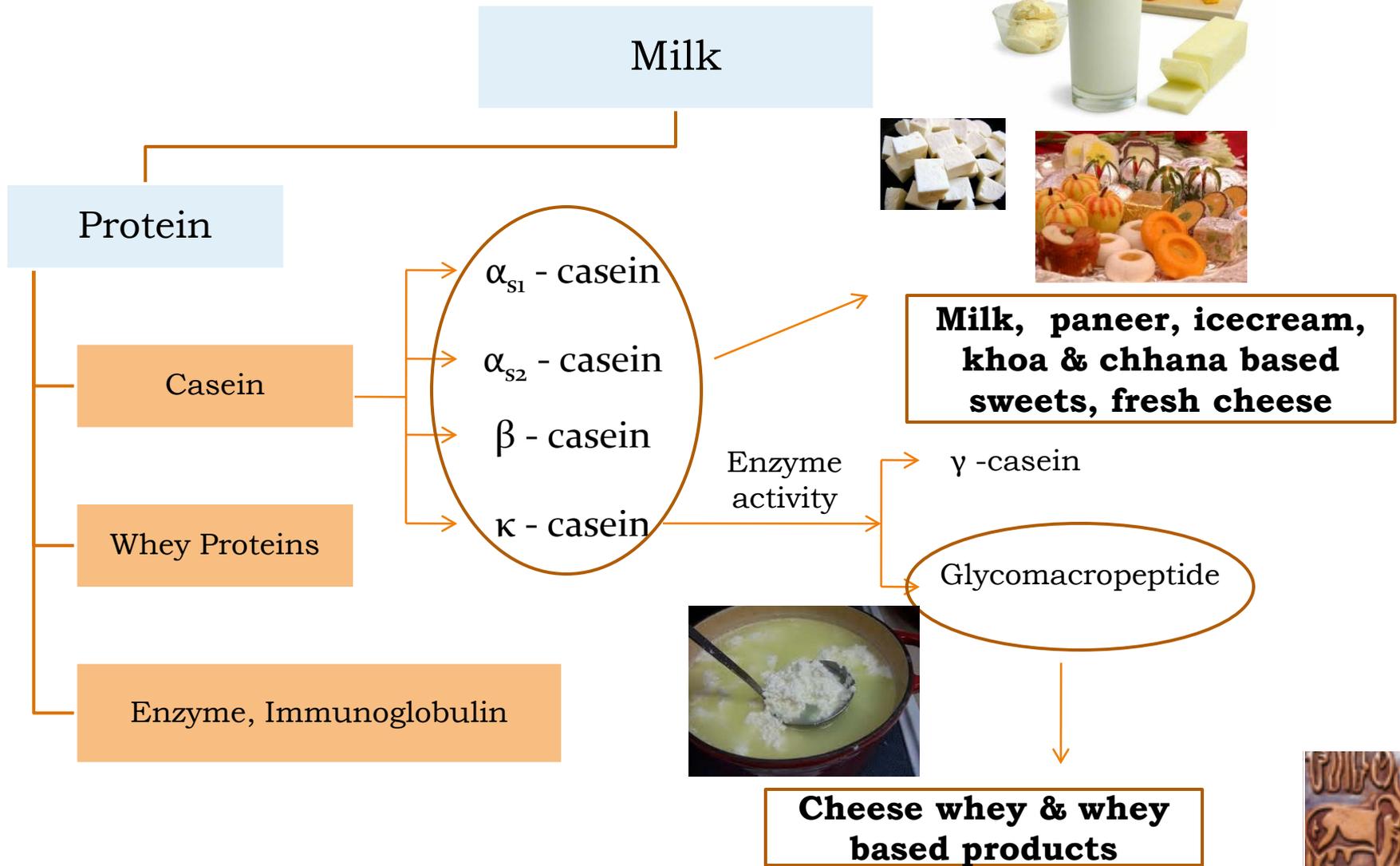
Major Bioactive Functional Compounds of Milk



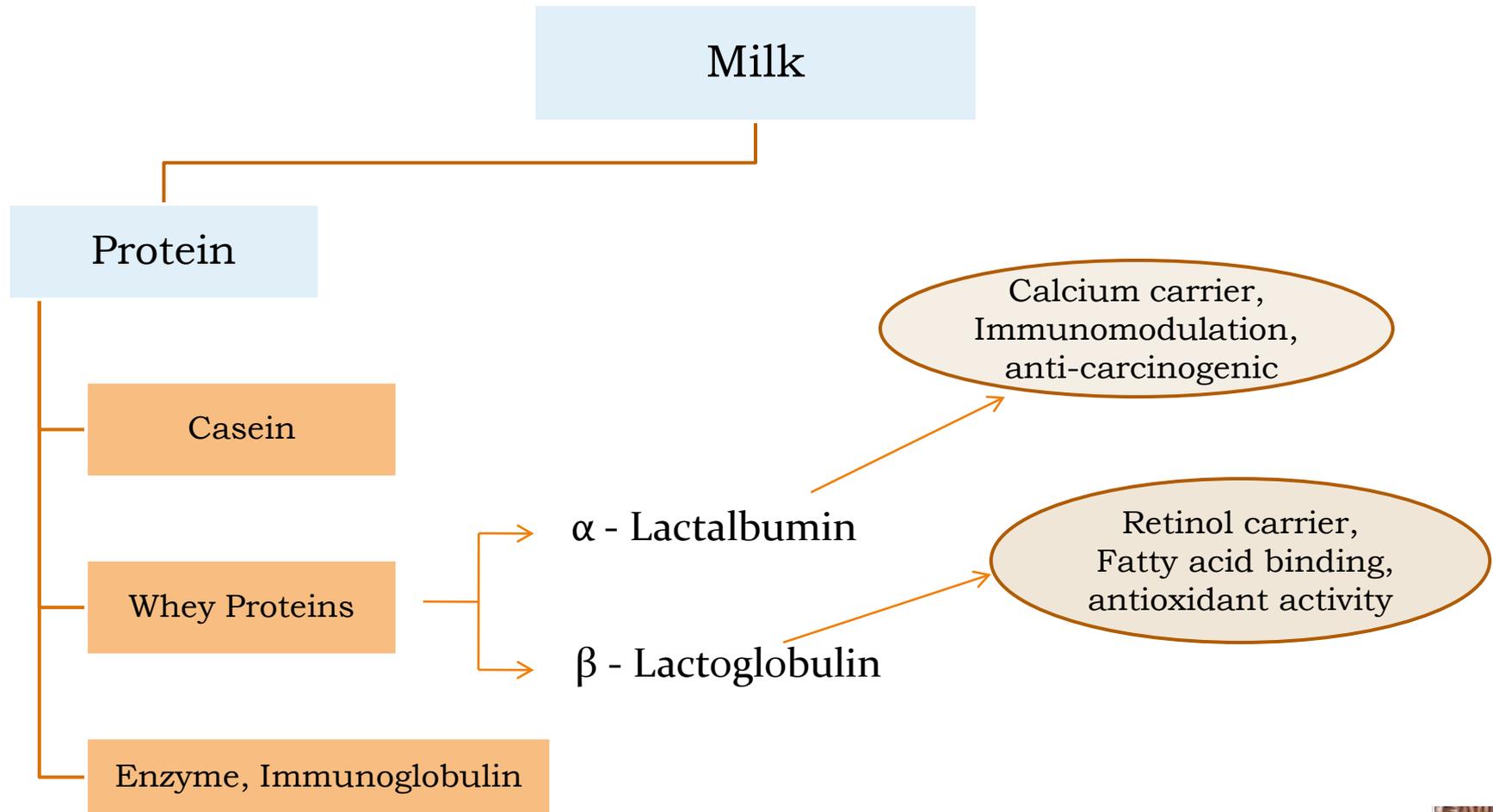
Biofunctionality of Casein



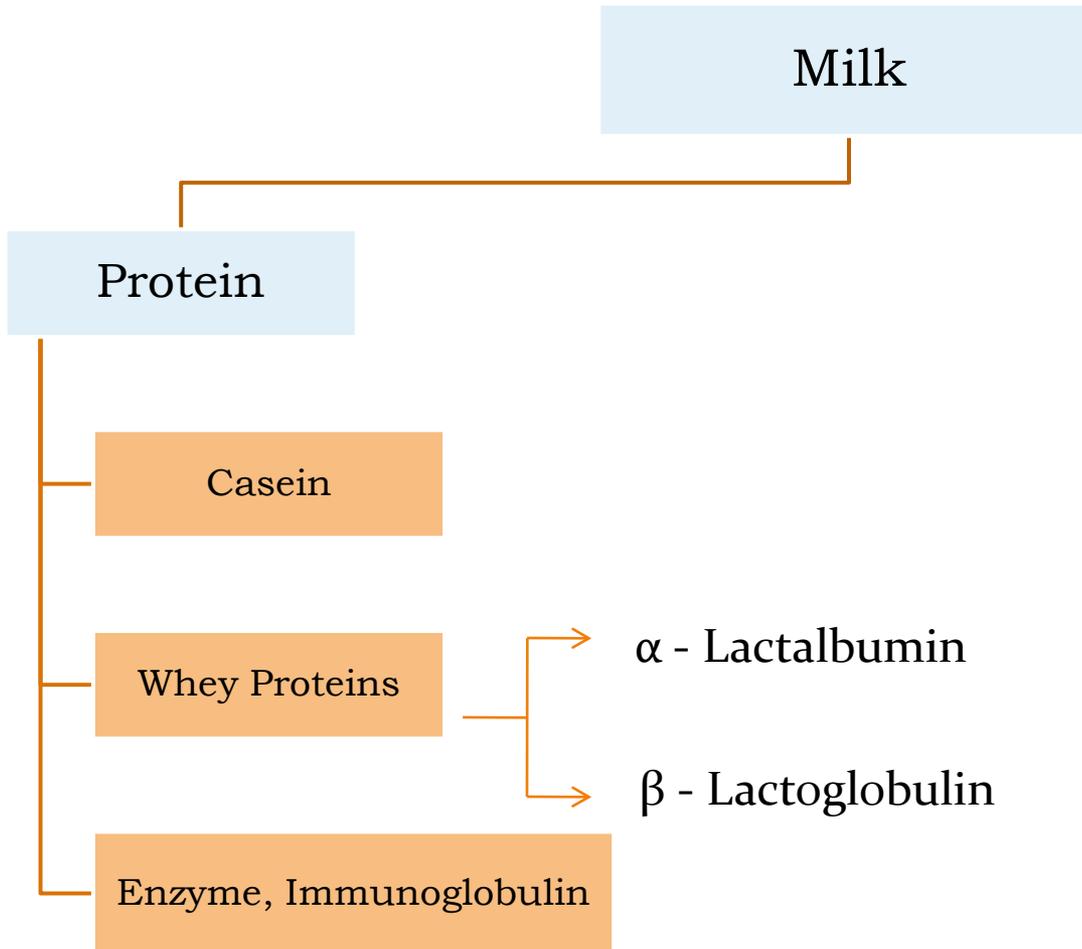
Products



Biofunctionality of Whey Protein



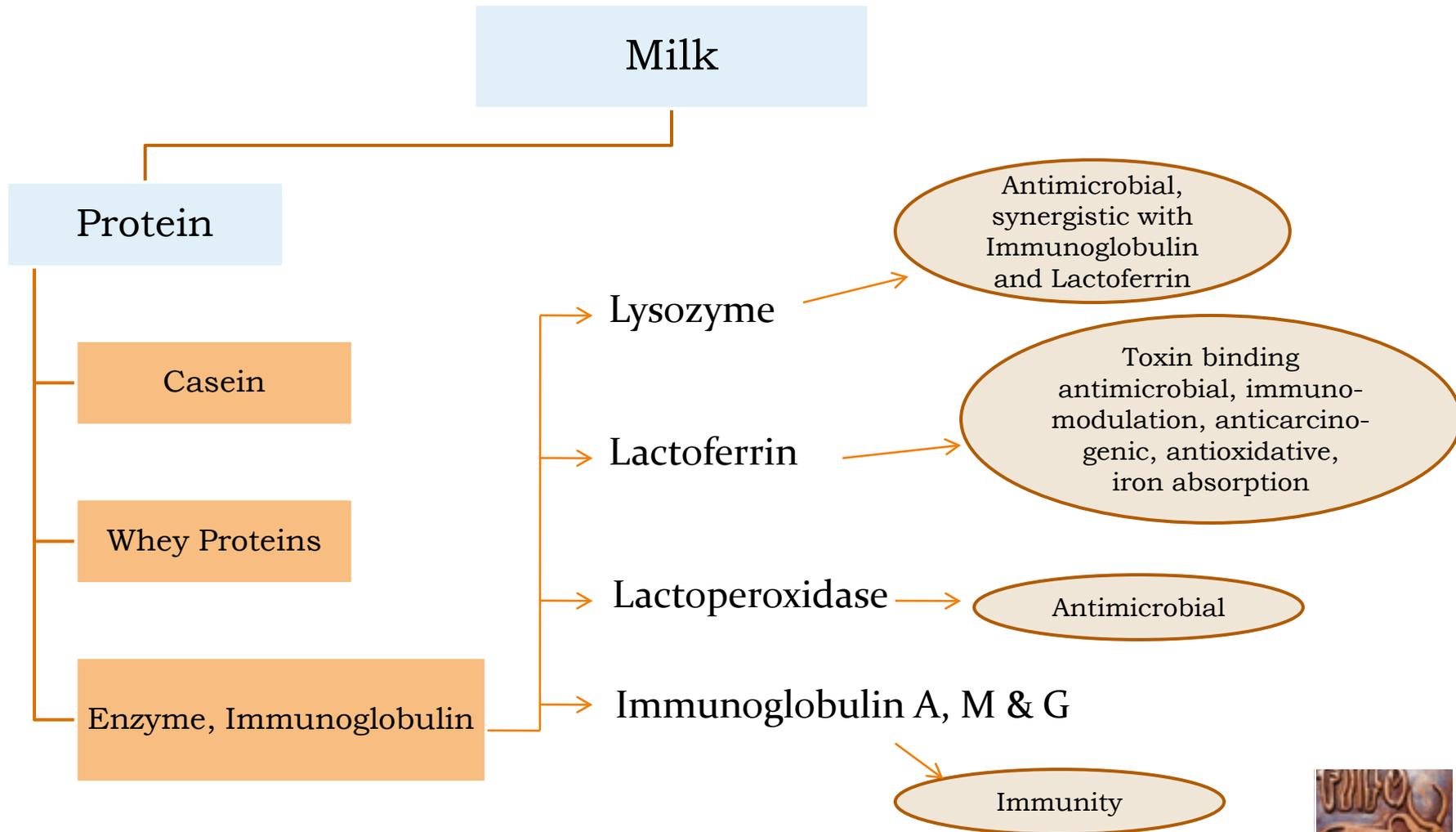
Products



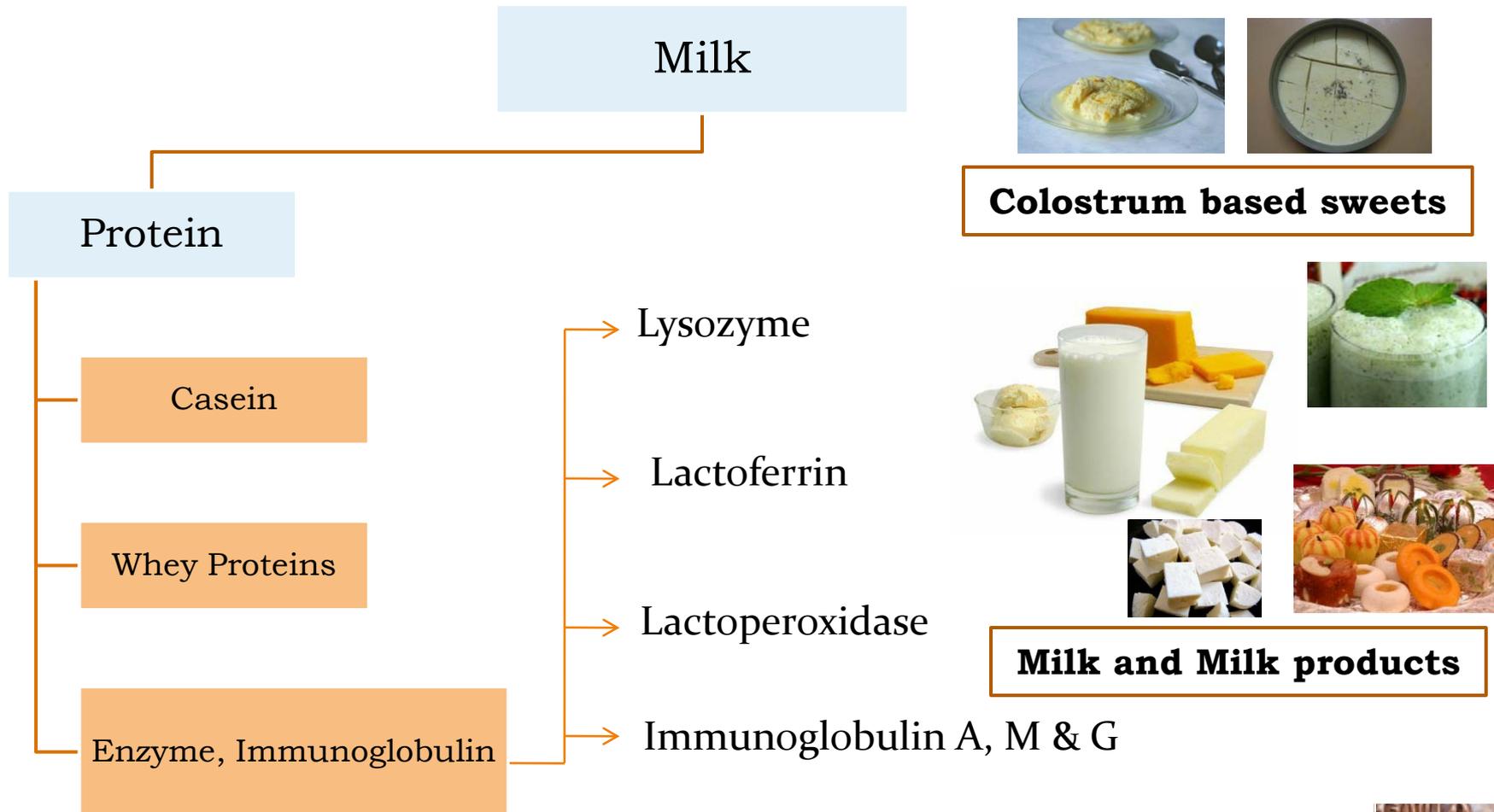
Milk and whey from paneer, dahi, cheese & whey based drinks, powder



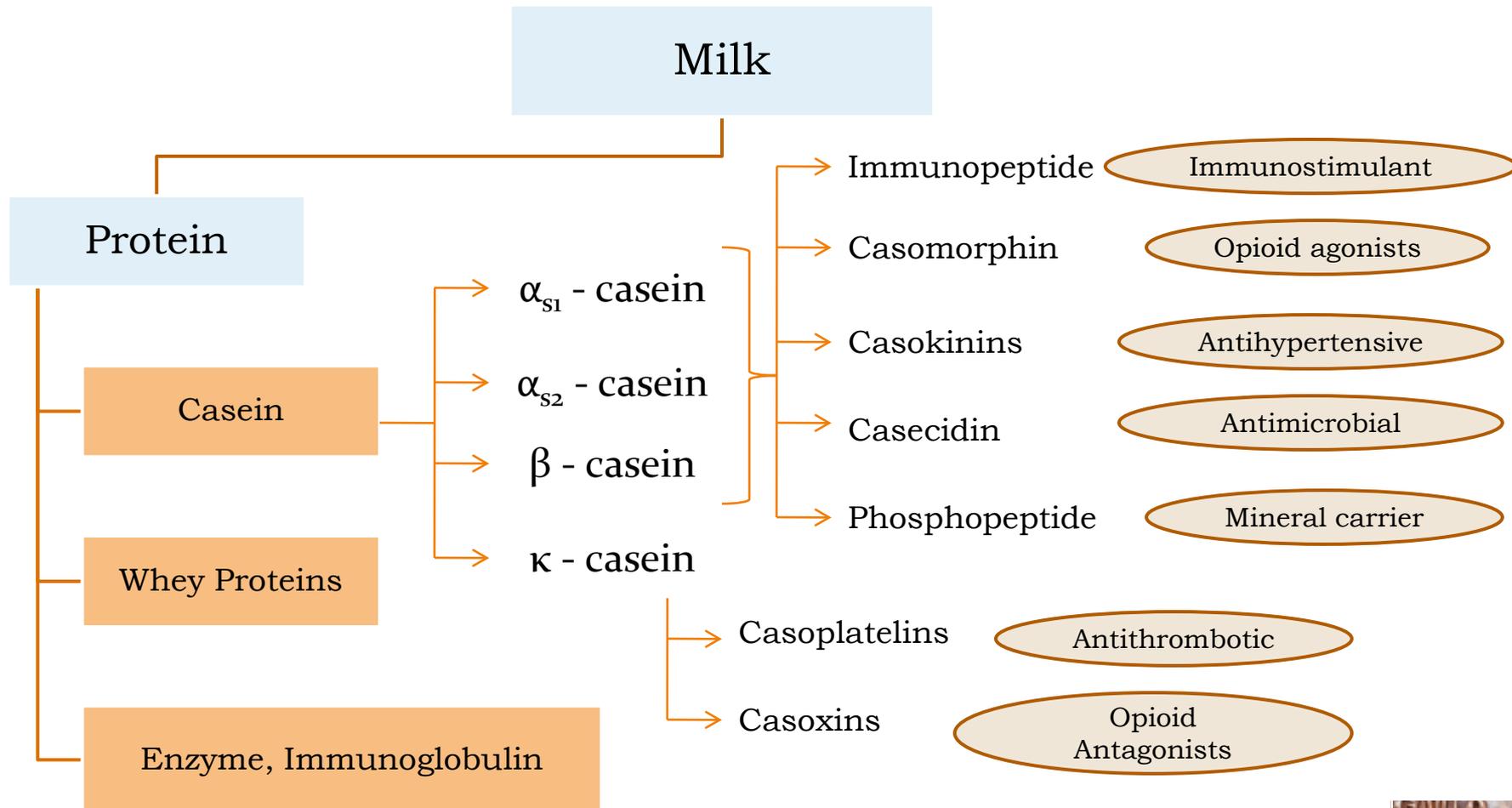
Biofunctionality of Enzymes & Immunoglobulin



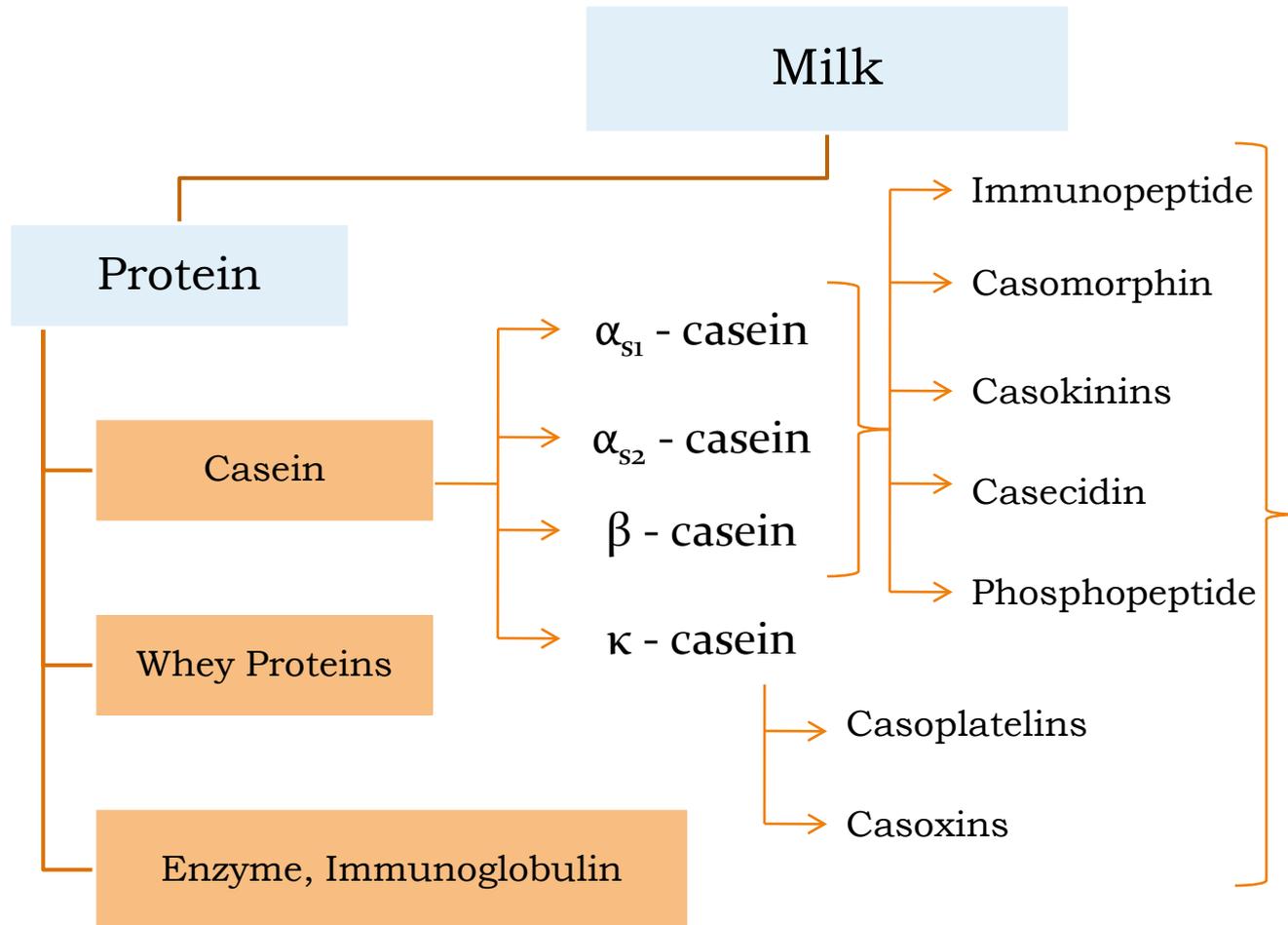
Products



Bioactive peptide derived from Casein



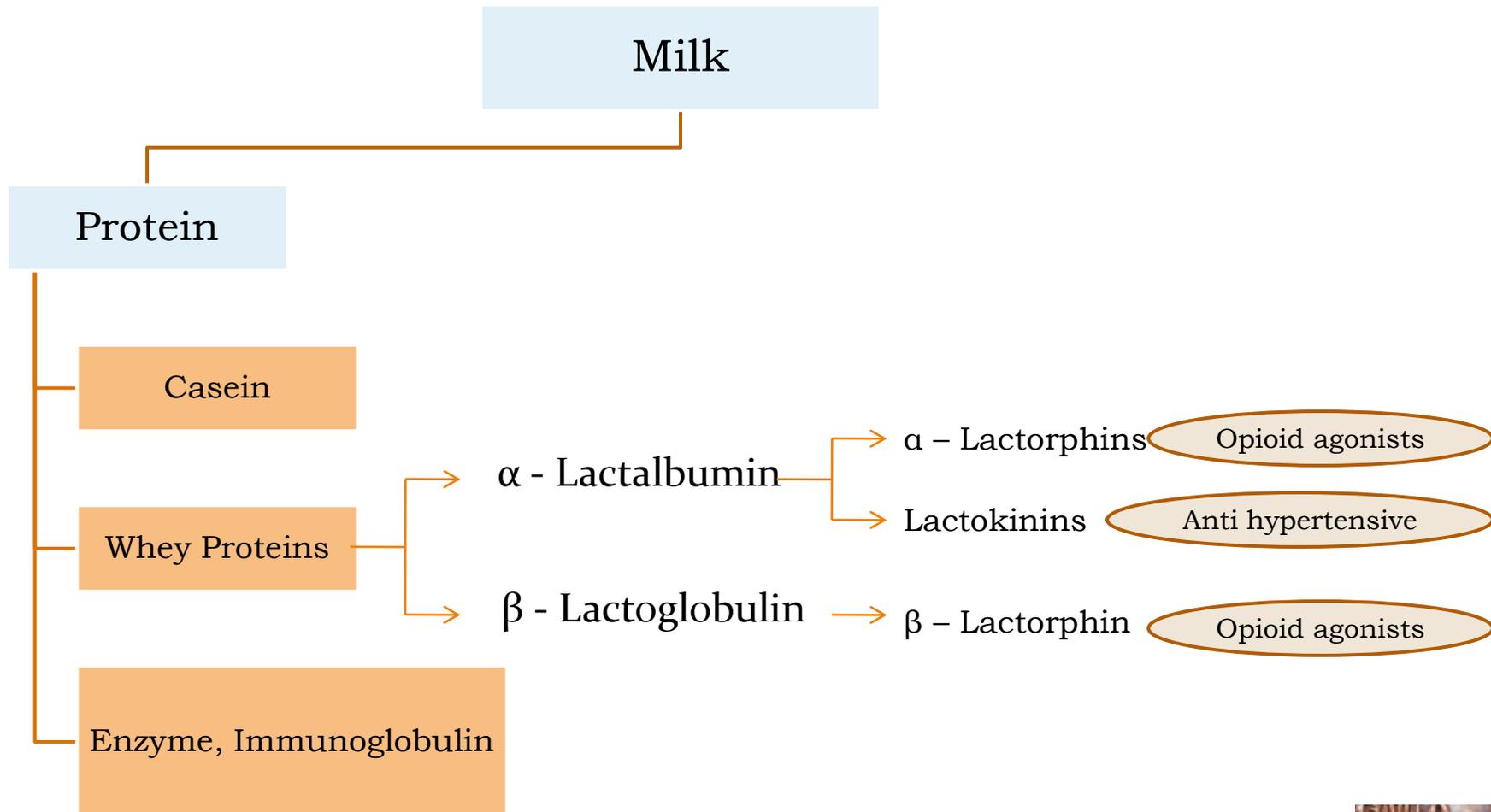
Products



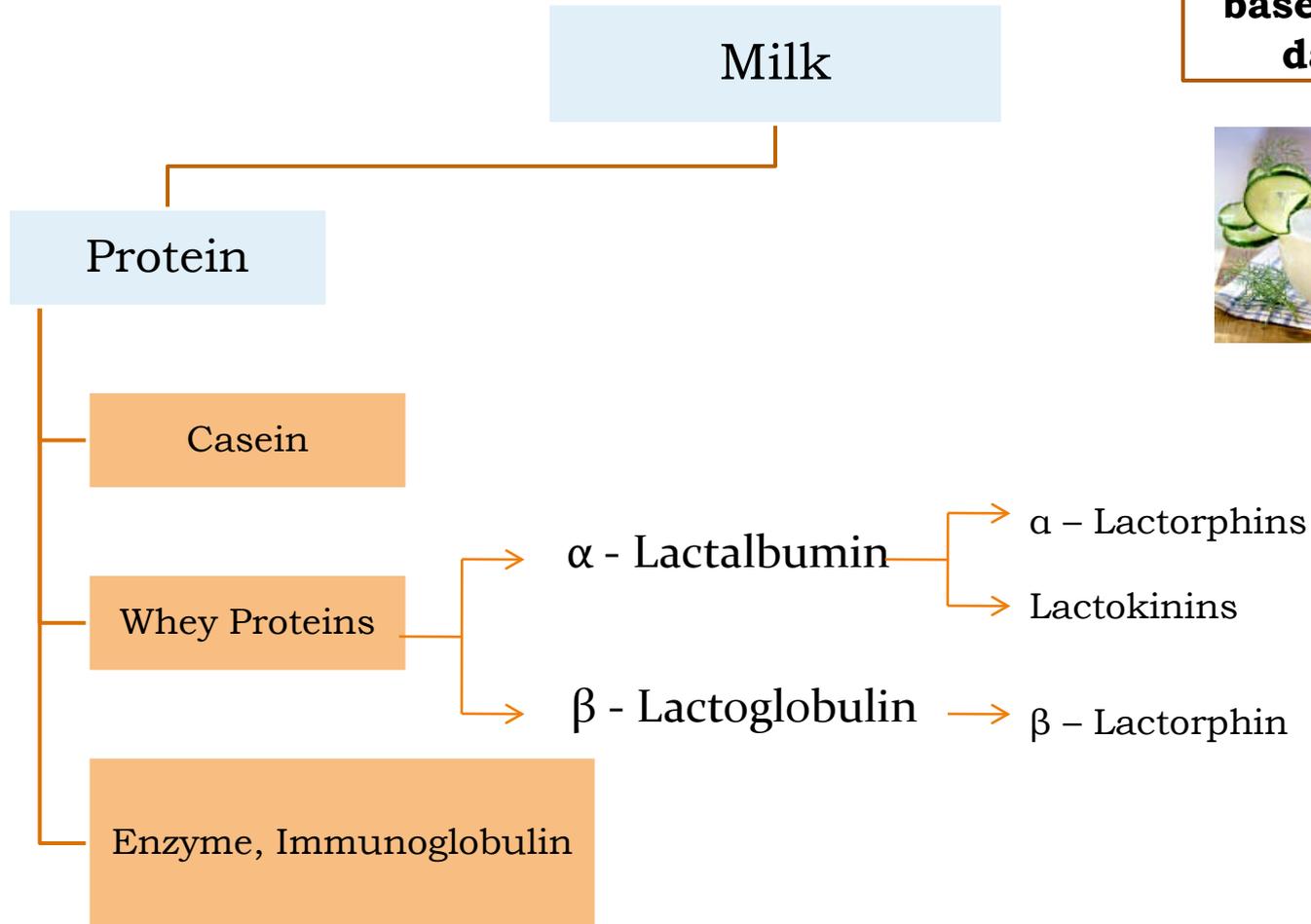
Fermented Dairy Products



Bioactive Peptide derived from Whey Proteins



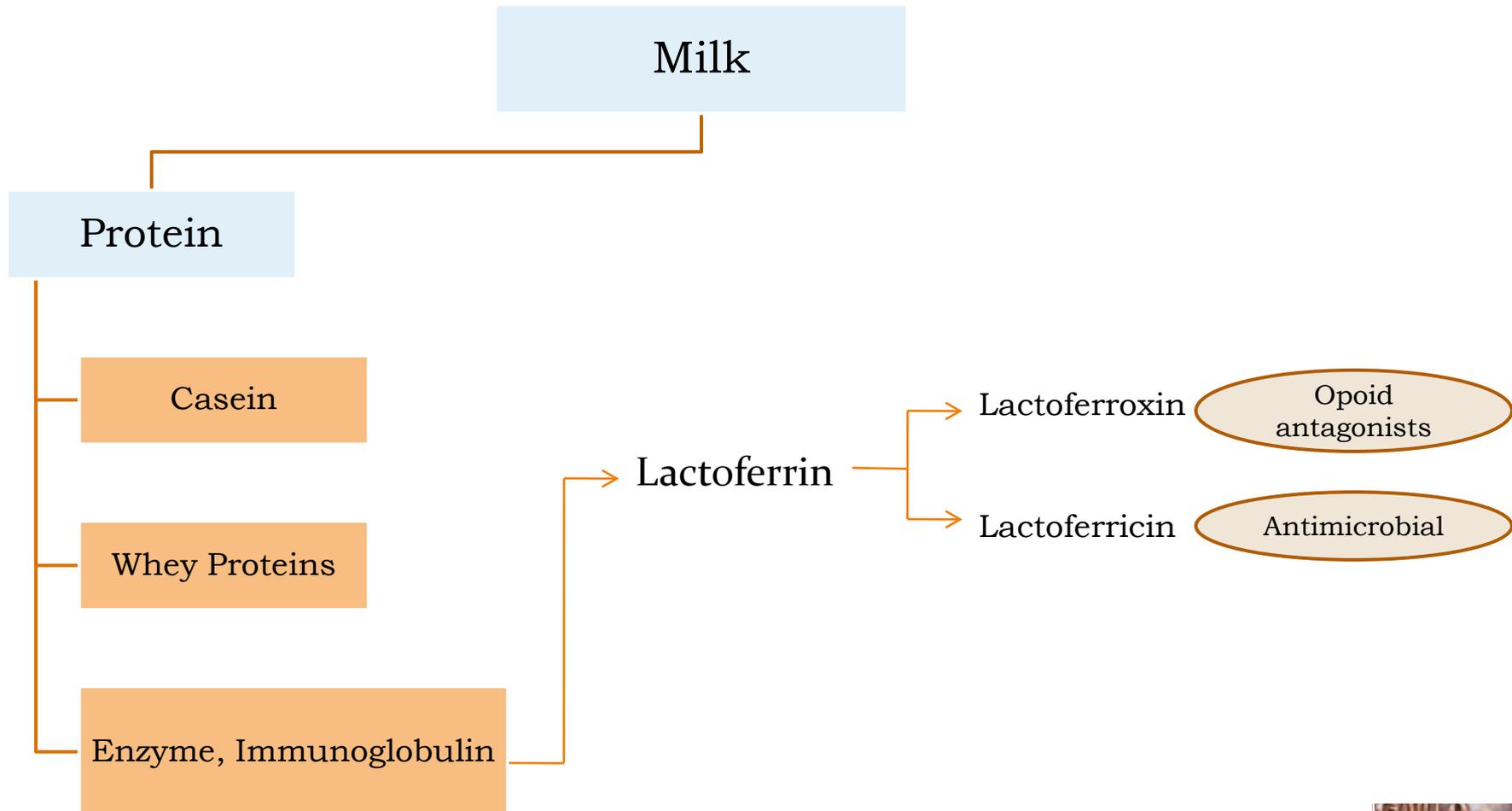
Products



Dahi and whey based fermented dairy drink

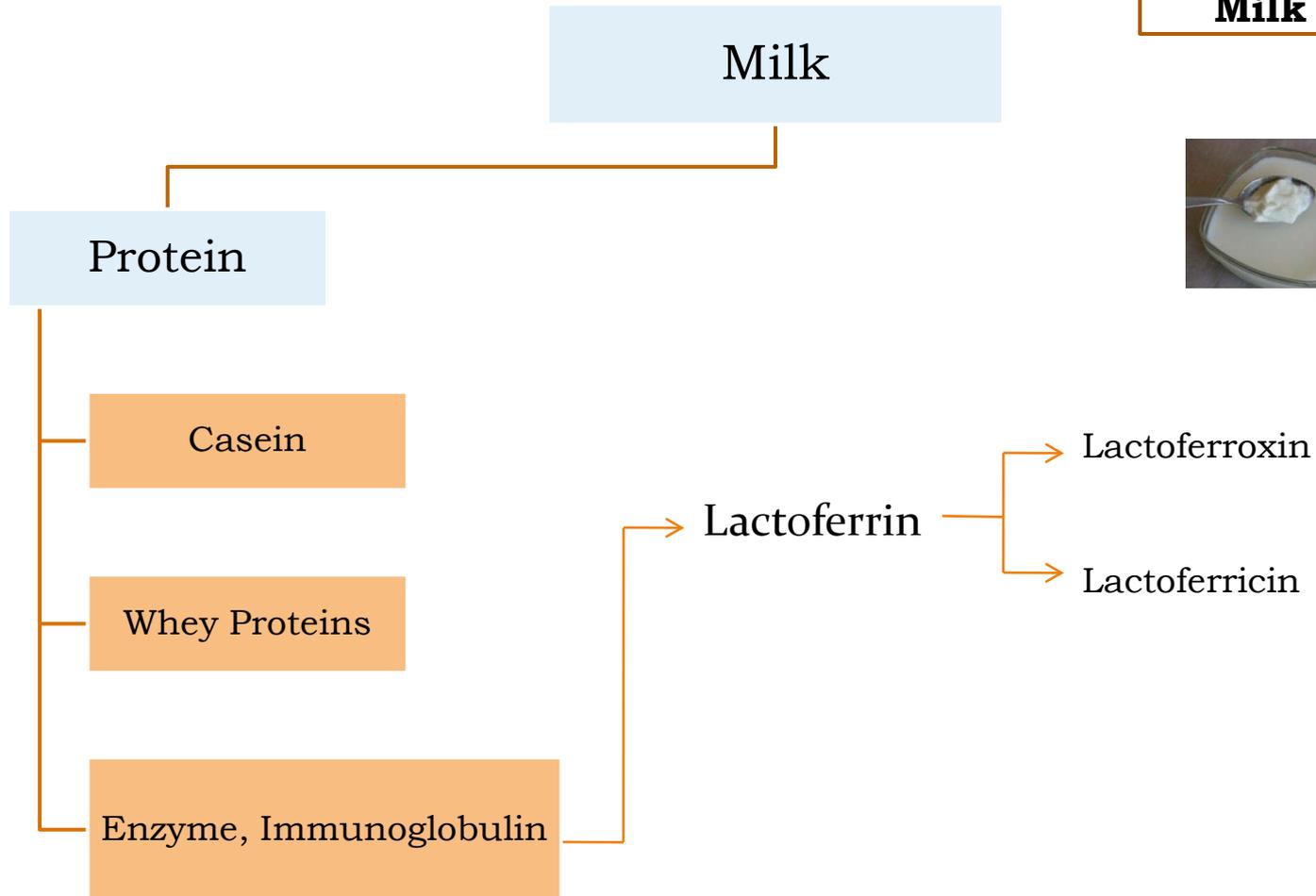


Bioactive peptide derived from minor components

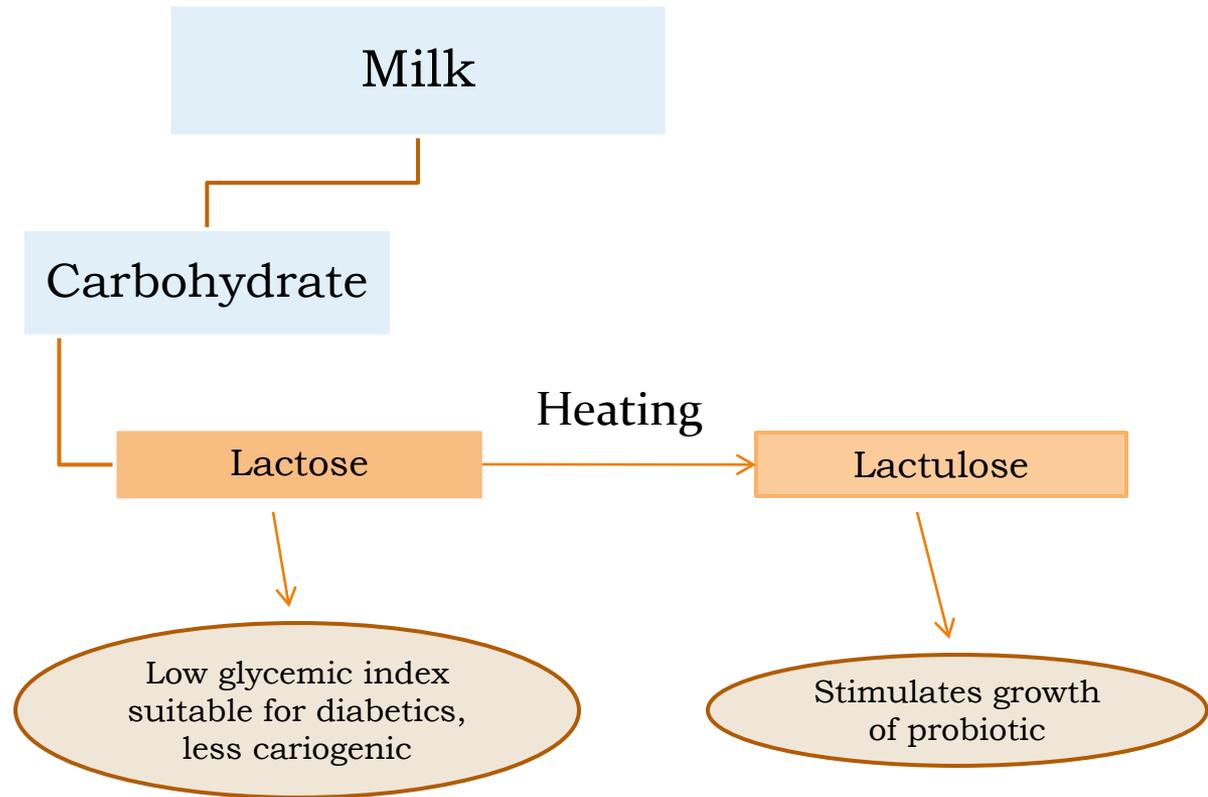


Products

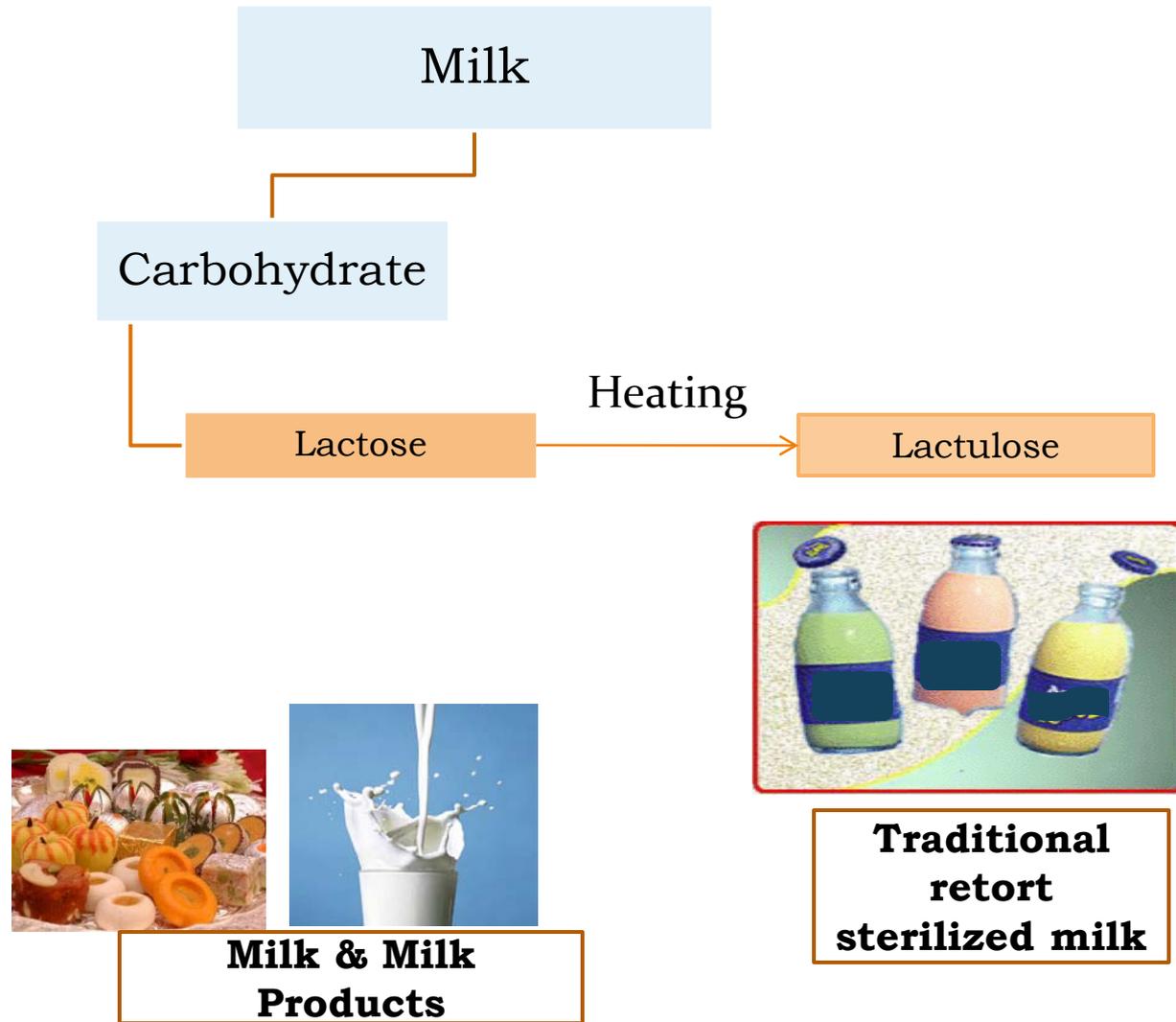
**Colostrum based
Sweets, Milk &
Milk Products**



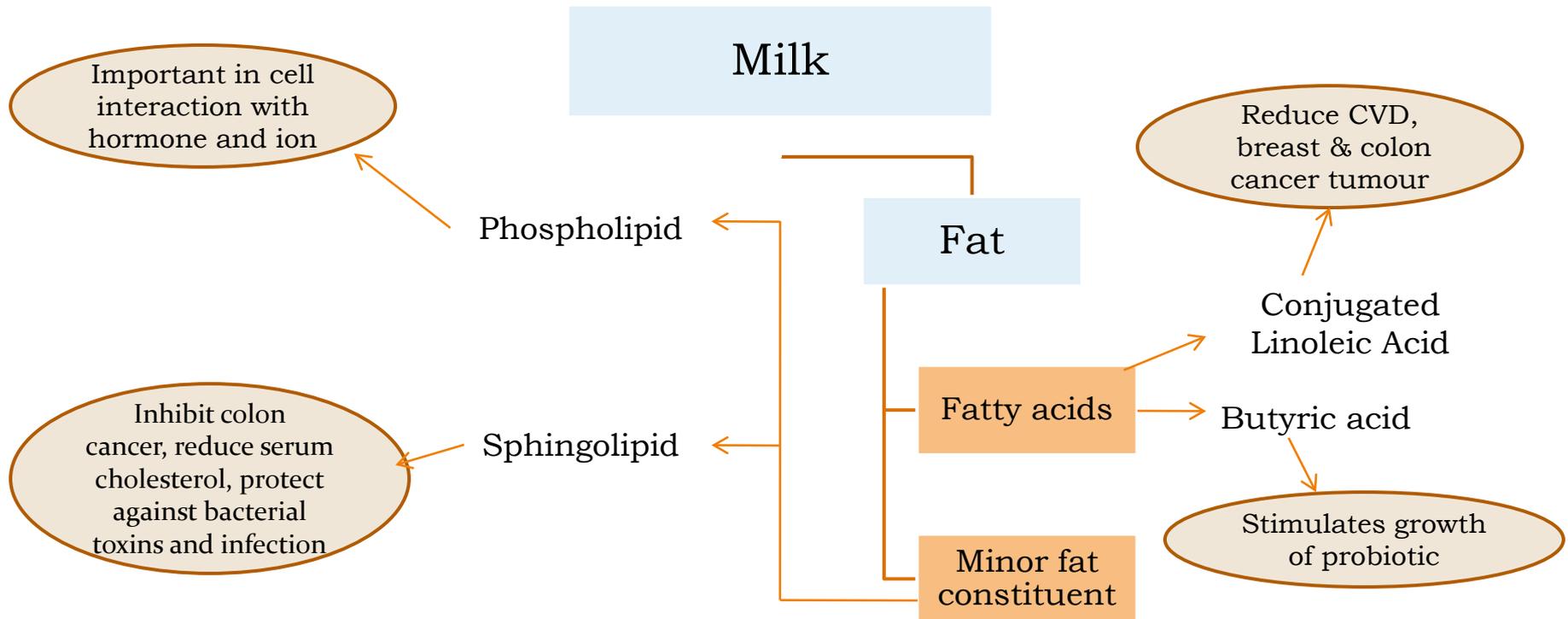
Biofunctionality of Milk Sugar



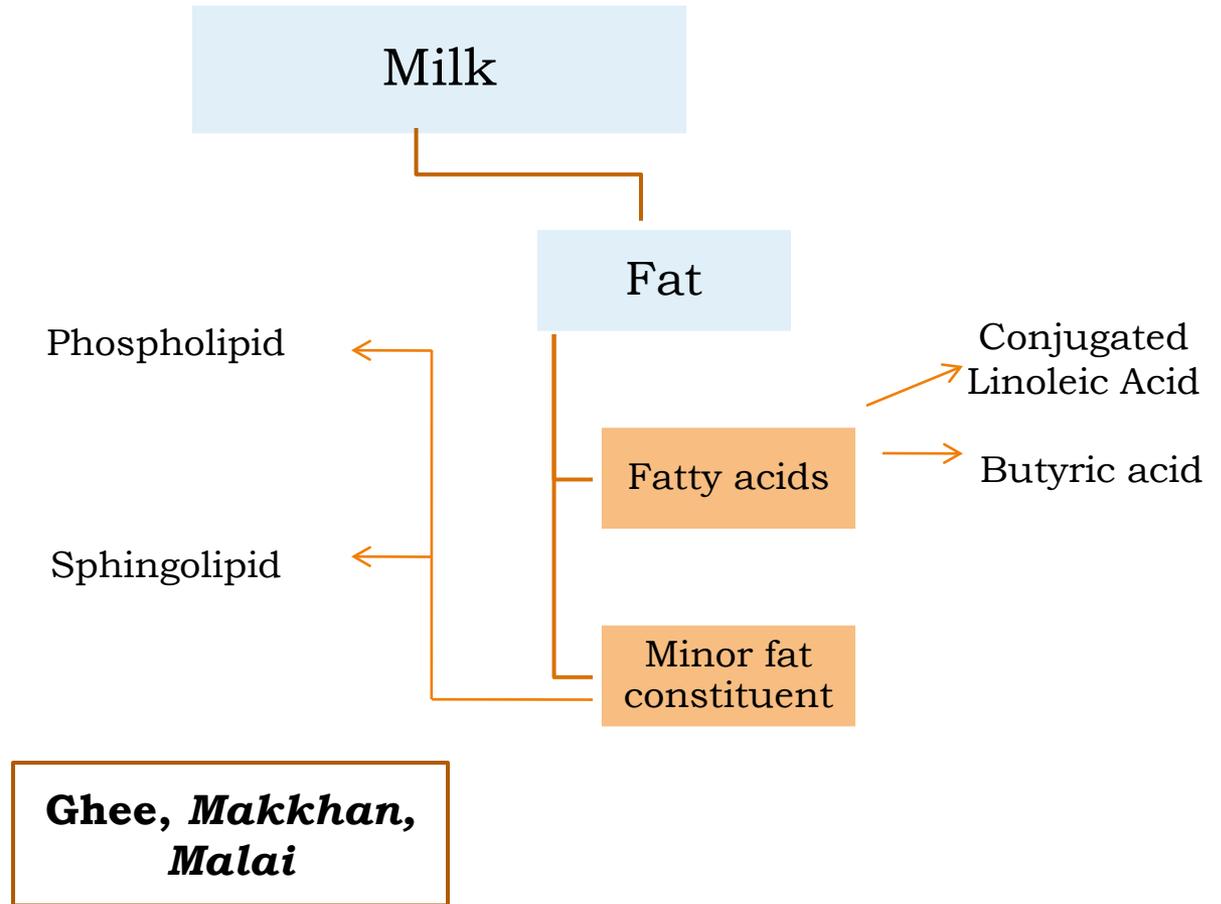
Products



Biofunctionality of Milk Fat Constituents



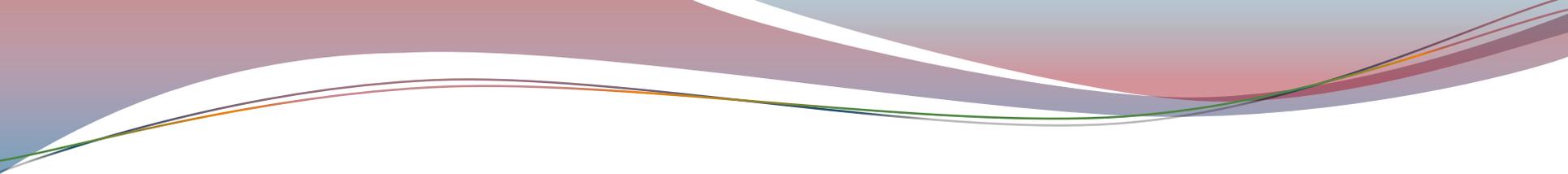
Products



Conclusions

- The bio-functionality of milk and milk products is well established in various in-vitro and in-vivo studies :
 - Cow Milk
 - Buffalo Milk : Infancy
- Milk and milk products, particularly Traditional Dairy Products: part of regular diet and thus its functional benefits could reach to a wide population
- Efforts needs to be made to study functionality of the bio-active components in traditional dairy products
 - Naturally and As a Vehicle
- This would facilitate value addition to milk product
 - Provide health & wellness to larger population
 - More return to milk producers





Thank You !

Acknowledgement :

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