

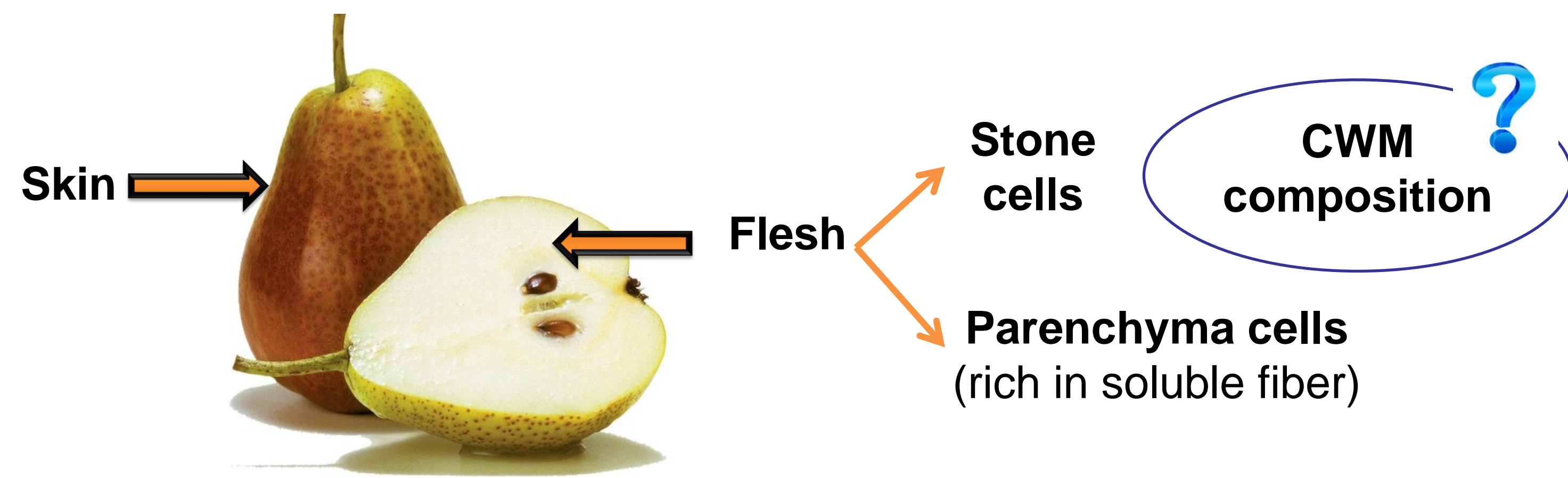
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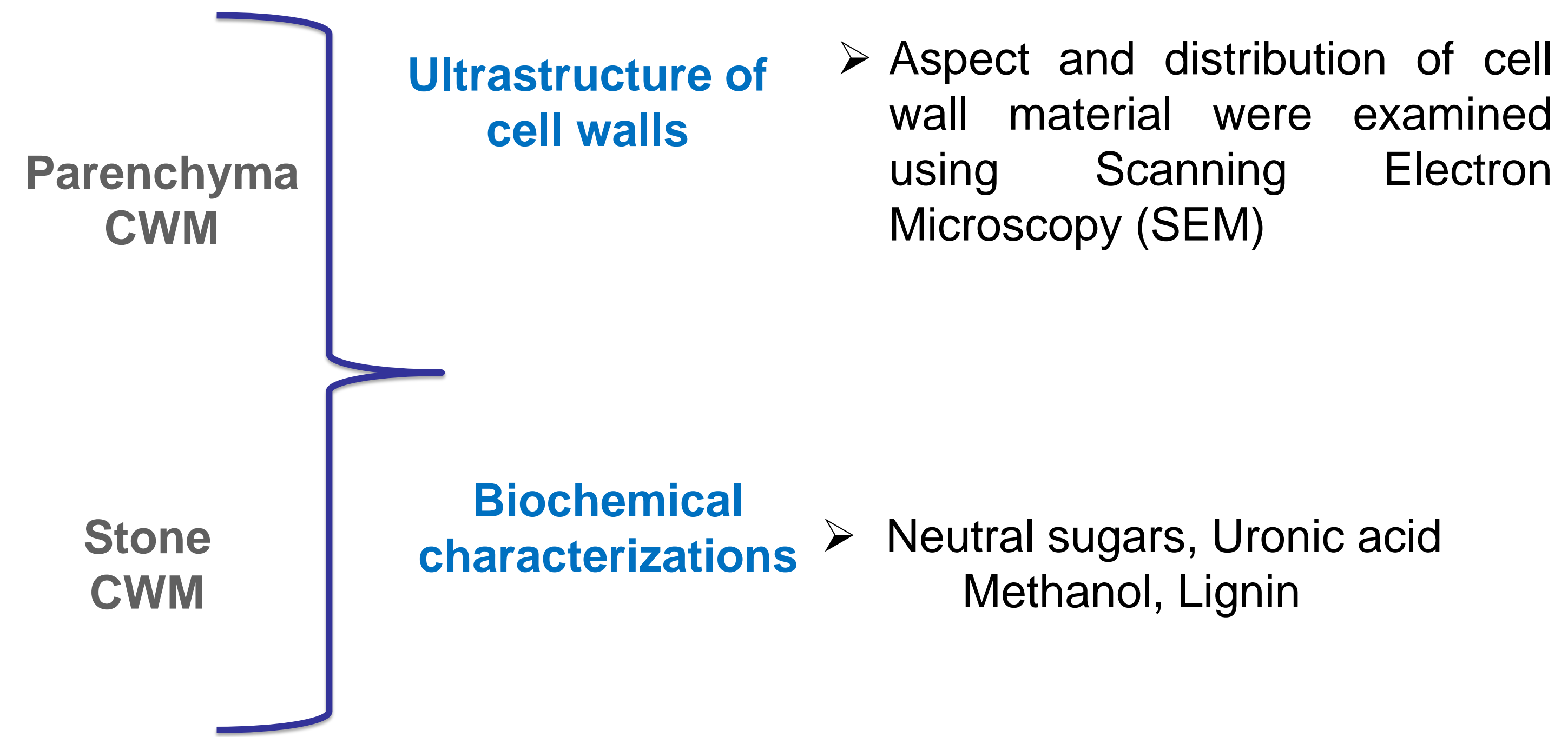
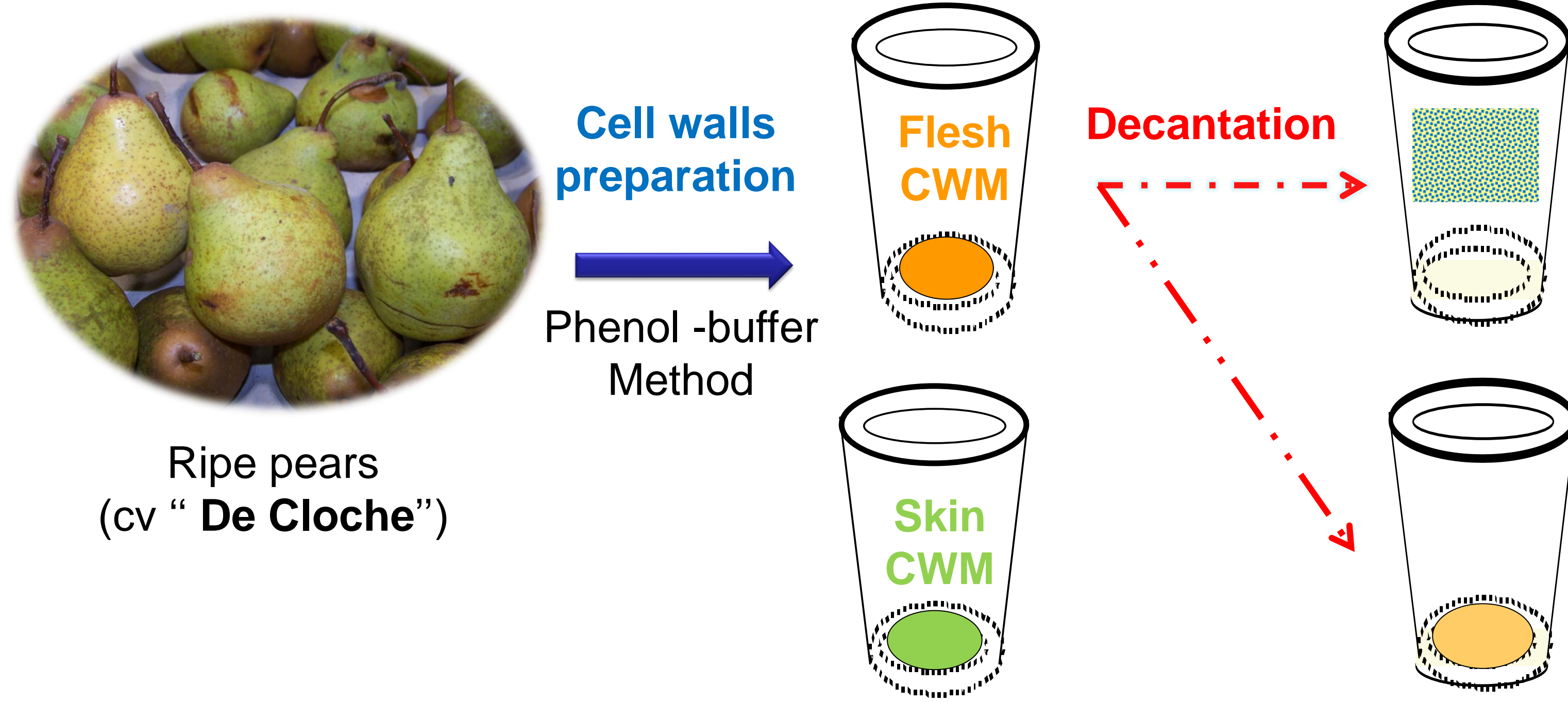
Context

Most recent definition of dietary fiber encompass all **polysaccharides** and **lignin** that resist digestion in the upper gut and which belong to the plant cell walls. Fruits are important source of dietary fiber and, in particular, good sources of soluble fiber. In most species, fruit flesh is predominantly composed of parenchyma cells. In pears, (*Pyrus communis* L.), the cortical tissue also contains **stone cells** which are rich in lignin. The aim of this work was to characterize cell wall material (CWM) from flesh and skin tissue and to report the difference between stone cells and parenchyma cells.



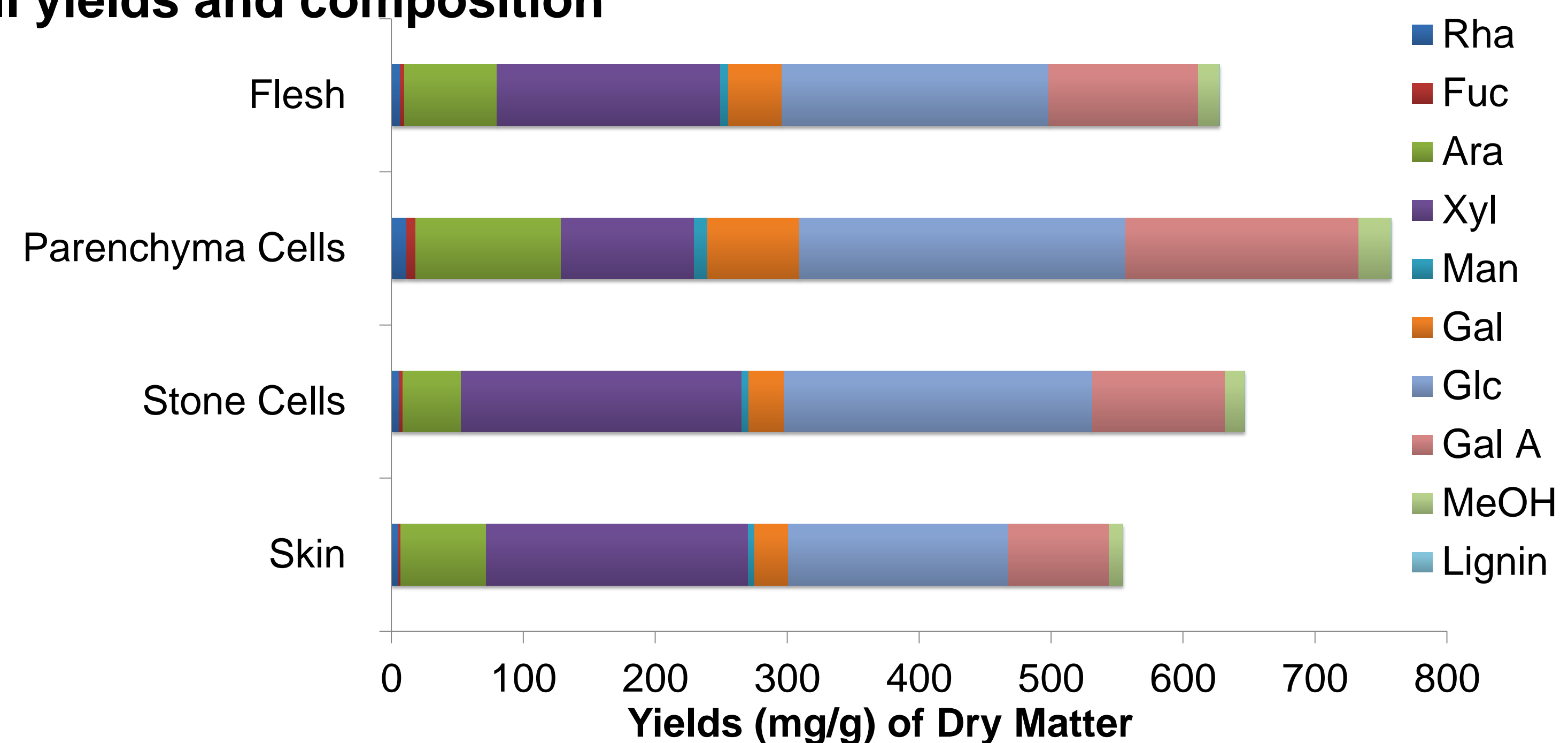
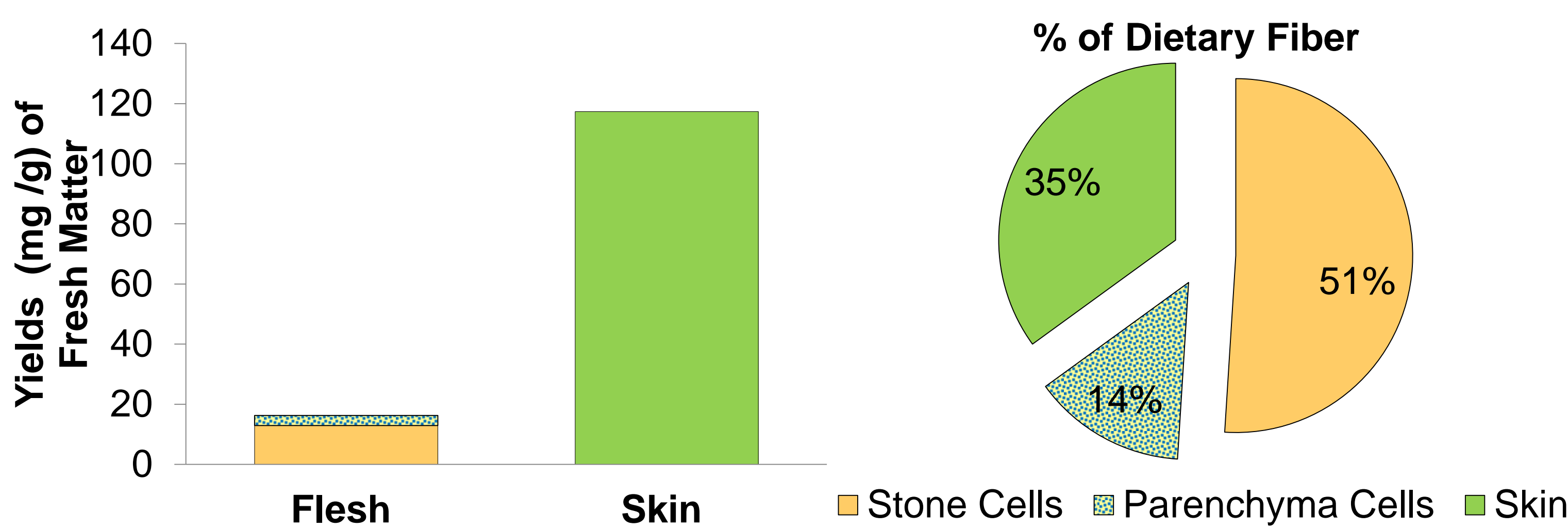
Pear flesh is composed of **parenchyma cells** and **stone cells**

Materials and Methods



Results

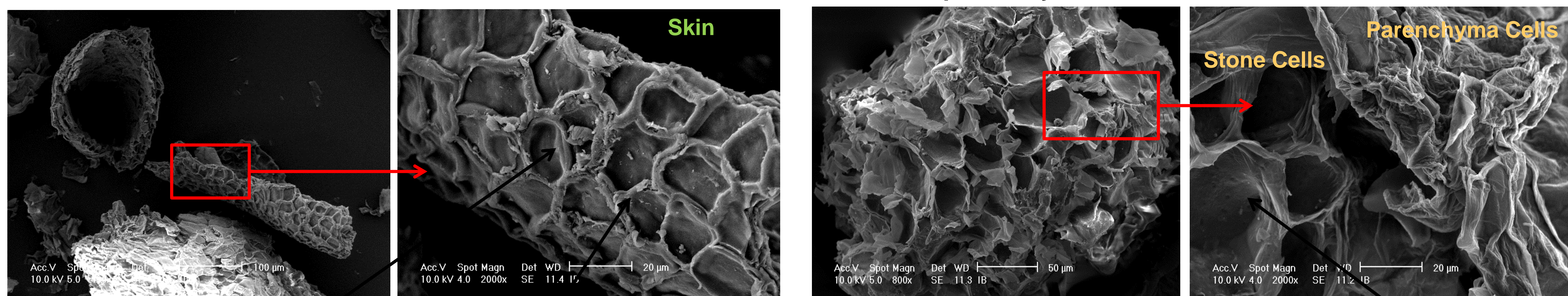
Dietary Fiber, Cell wall yields and composition



- ✓ Skin cell wall material content was 7 times higher than in the flesh.
- ✓ Yields from parenchyma cells were much lower than stone cells.
- ✓ Pear dietary fiber come mainly from skin and stone cells.

- ✓ Cell wall polysaccharides were mostly constituted of **glucose, xylose and galacturonic acid**.
- ✓ Stone cells differed from parenchyma cells by a higher amount of **xylose and lignin**.
- ✓ The degree of methylation ranged from 70 to 80 %.

Ultrastructure of skin, stone cells and parenchyma cells



Curved empty cells

Cell walls

Parenchyma and stone cells

Pits

- ✓ The skin CWM was formed by a network of curved empty cells with regular form.

- ✓ Stones cells were observed by SEM as aggregates of well defined empty cells surrounded by parenchyma cells.
- ✓ Simple pits were presented throughout the surface of cell walls of stone cells and allowed the connection between cells.

Conclusion

The particularity of the pear is represented mainly by the deposition of stone aggregates in the flesh. These cells constituted the major part of pear dietary fiber. Stone cells and parenchyma cells presented a different composition of neutrals sugars and lignin. Stone cells are composed of a secondary wall rich in lignin. Therefore, pears may contain more insoluble fibers compared to other fruits.

Acknowledgements

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