Feed Milk Value and Metabolic Characteristics of Proteins in Yellow-Seeded and Brown-Seeded Canola Meal and Presscake in Dairy Cattle

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Background

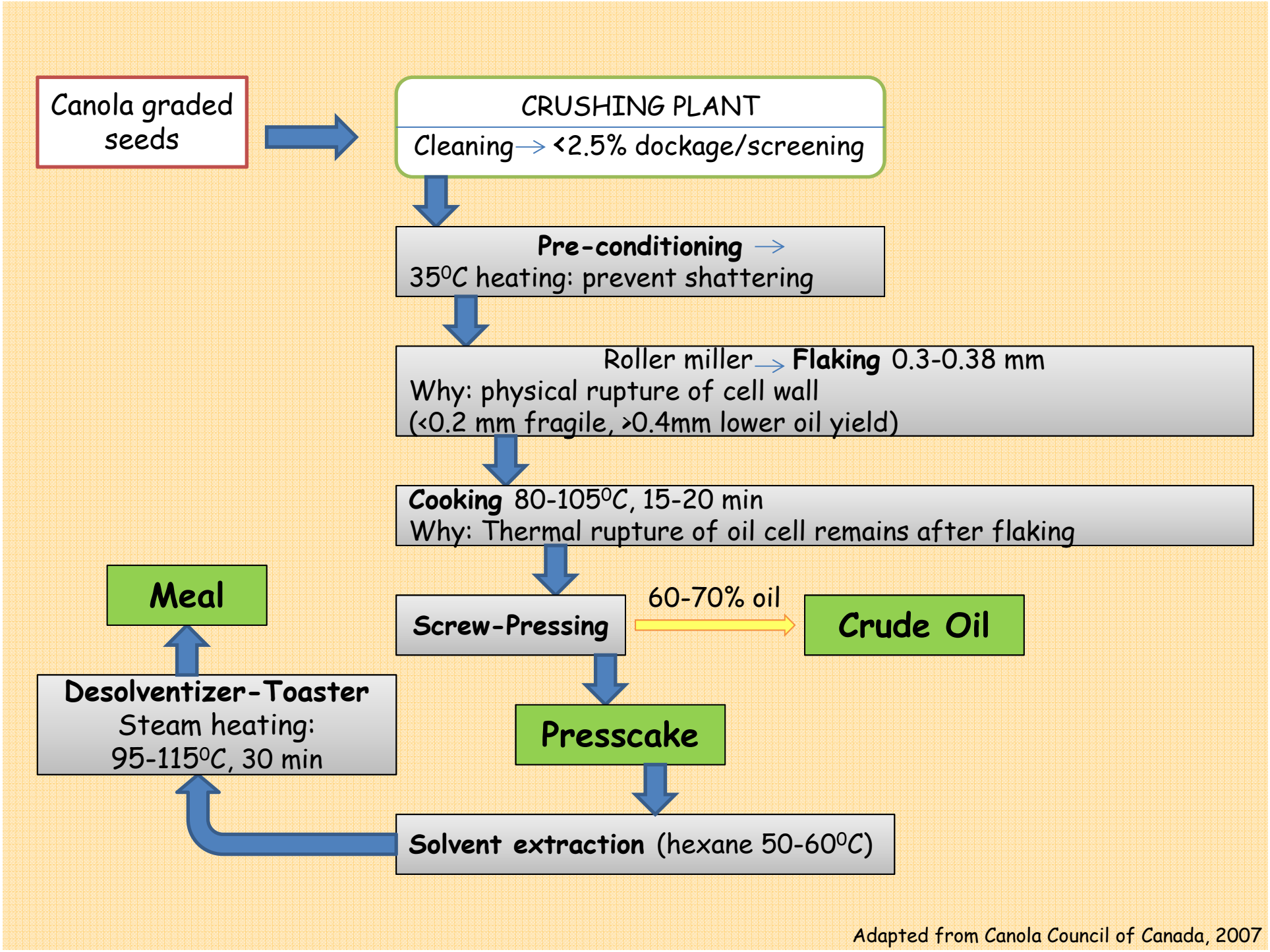
- World's 3rd leading source of vegetable oil
- Major oil-seed crop western Canada
- Traditionally breeding rapeseed 1970s

- Erucic acid: Traditional rapeseed-(20-55%) *vs* modern canola oil (<2%)
- Glucosinolates: low level (<30 µmol)
- Industrial processing: canola seed into an oil and a meal fraction
- Intermediate product: canola presscake

Objectives

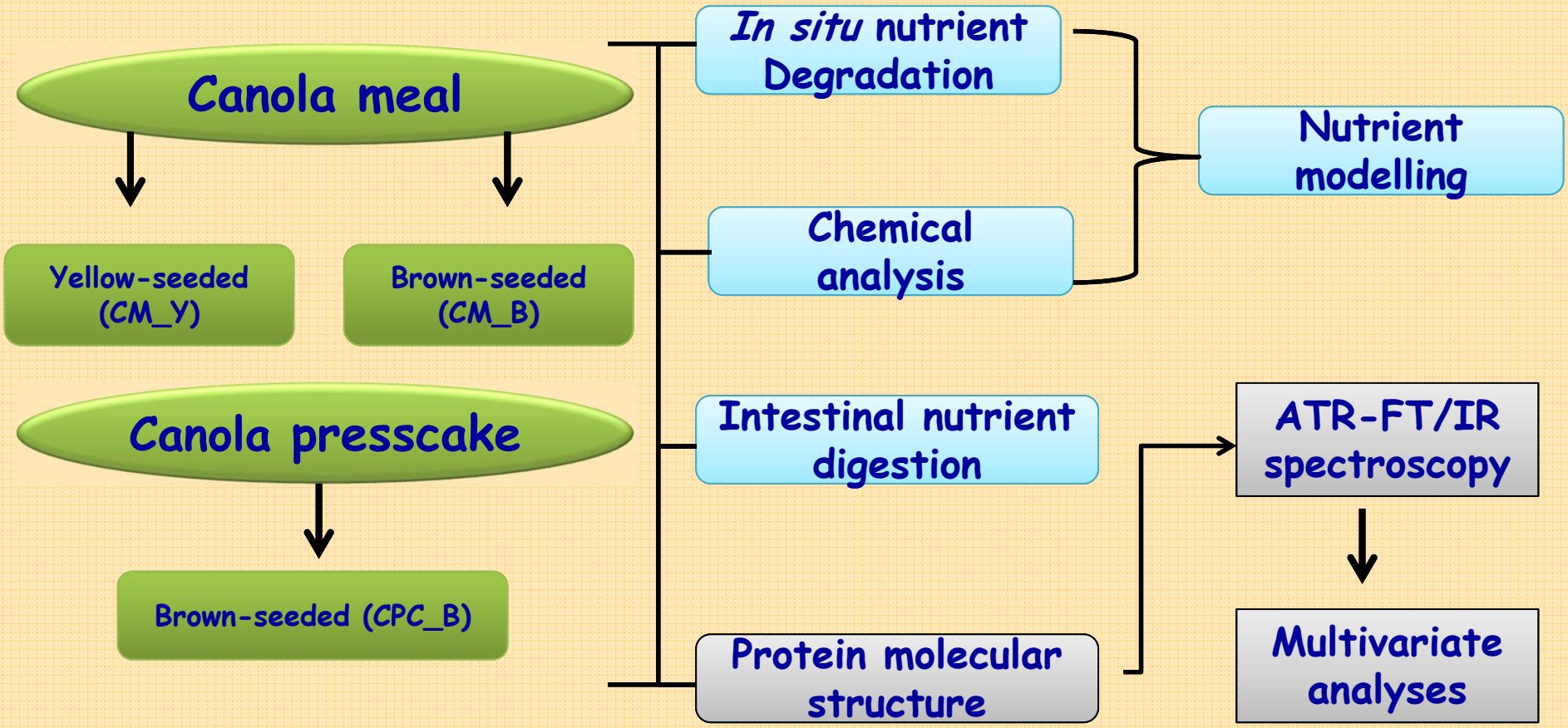
Evaluate and compare the nutritive value of yellow and brown-seeded canola meal and canola presscake for dairy cattle in terms of:

- ✓ nutrient profiles
- ✓ ruminal undegradable protein
- ✓ ruminal undegradable protein absorbed in the small intestine
- ✓ metabolic characteristics of protein and energy
- ✓ feed milk value



Adapted from Canola Council of Canada, 2007

Experimental Design



Materials and Methods

❖ Canola Meal

Yellow-seeded

Brown-seeded

❖ Canola Presscake

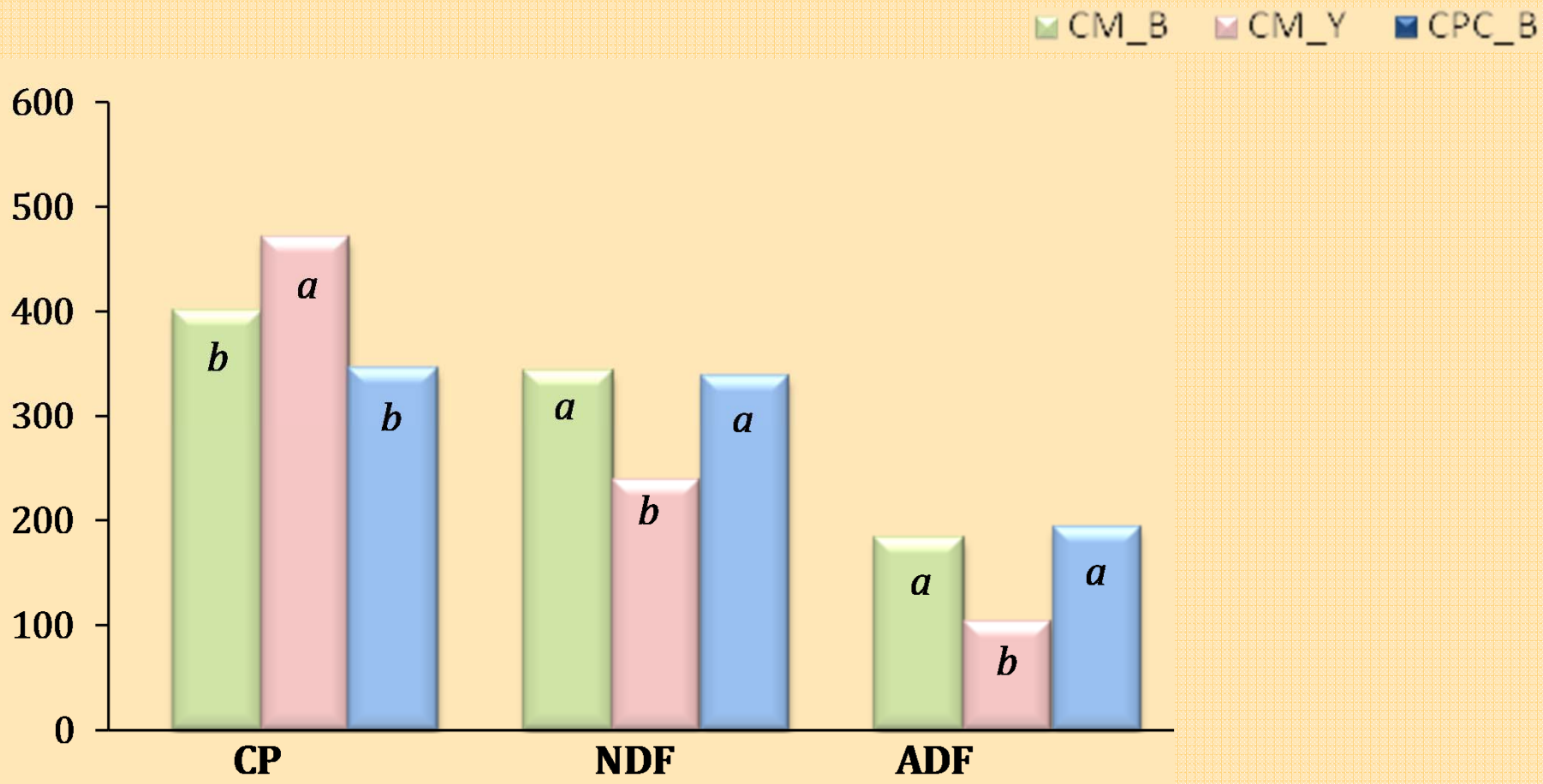
Brown-seeded

Part I

Nutrient profiles of canola meal and canola presscake

Results and Discussion

Nutrient profiles of canola meal and presscake (g /kg DM)

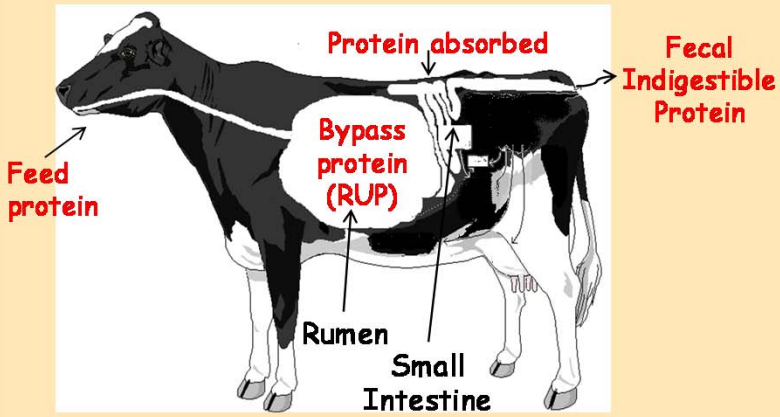


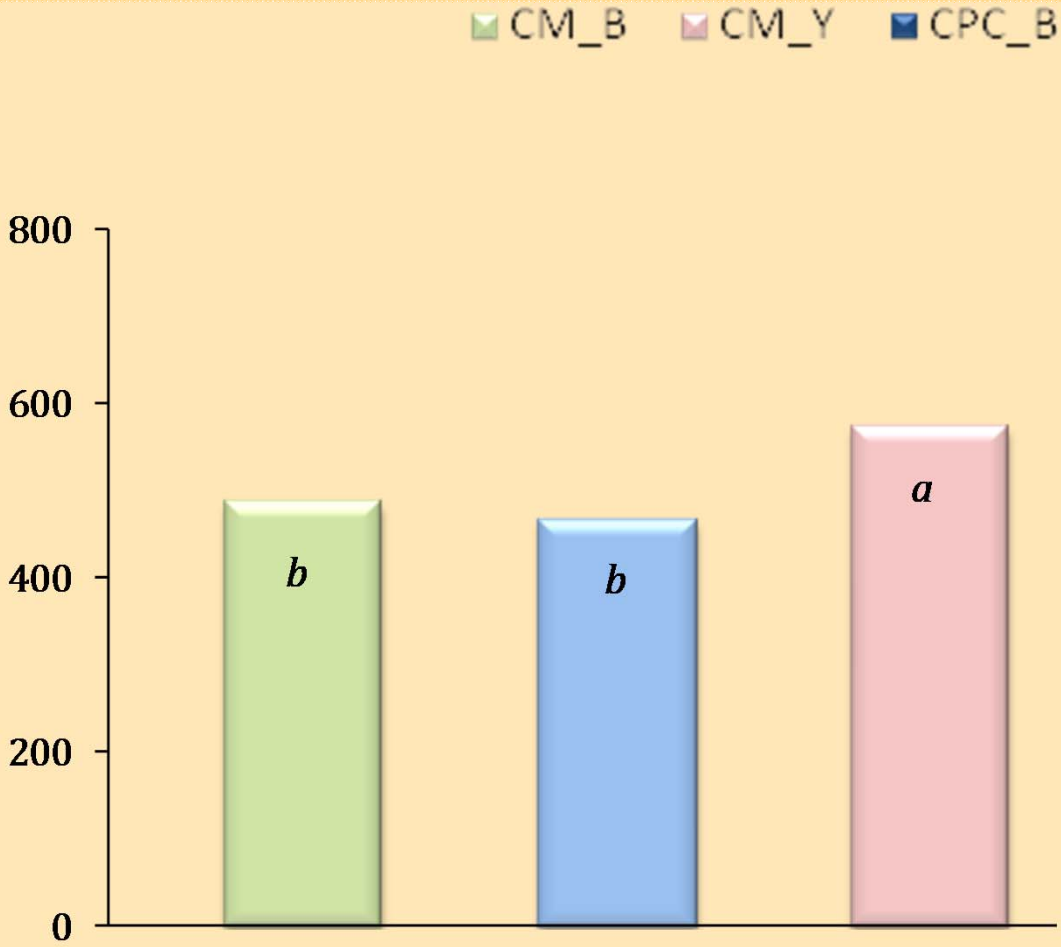
Part II

Rumen Undegradable Protein and Protein Absorbed in the Small Intestine

Results and Discussion

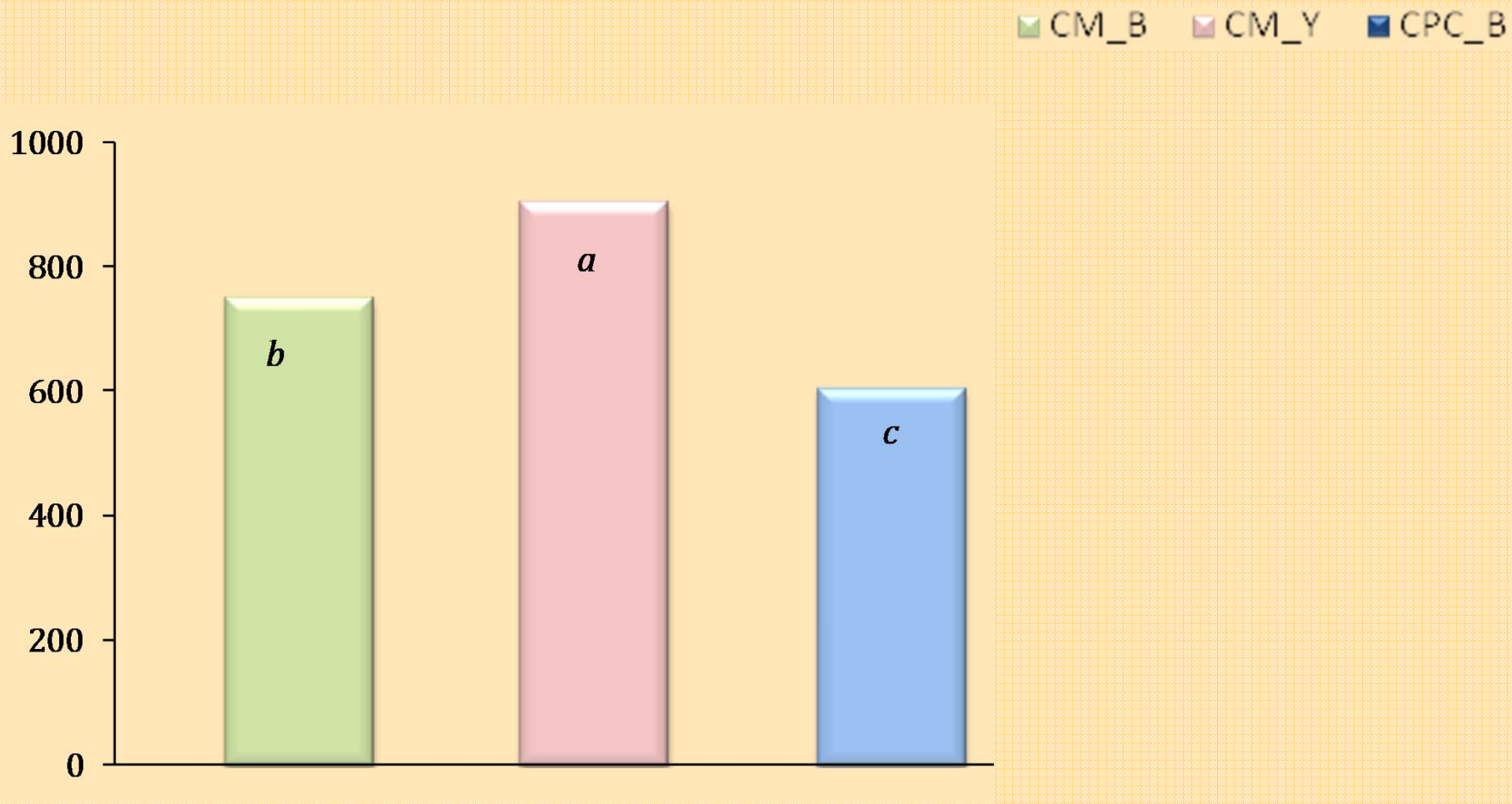
Rumen Undegradable Protein (By-pass Protein) (g/kg CP)





Results and Discussion

Ruminal Undegradable Protein absorbed in the Small Intestine (g/kg RUP)

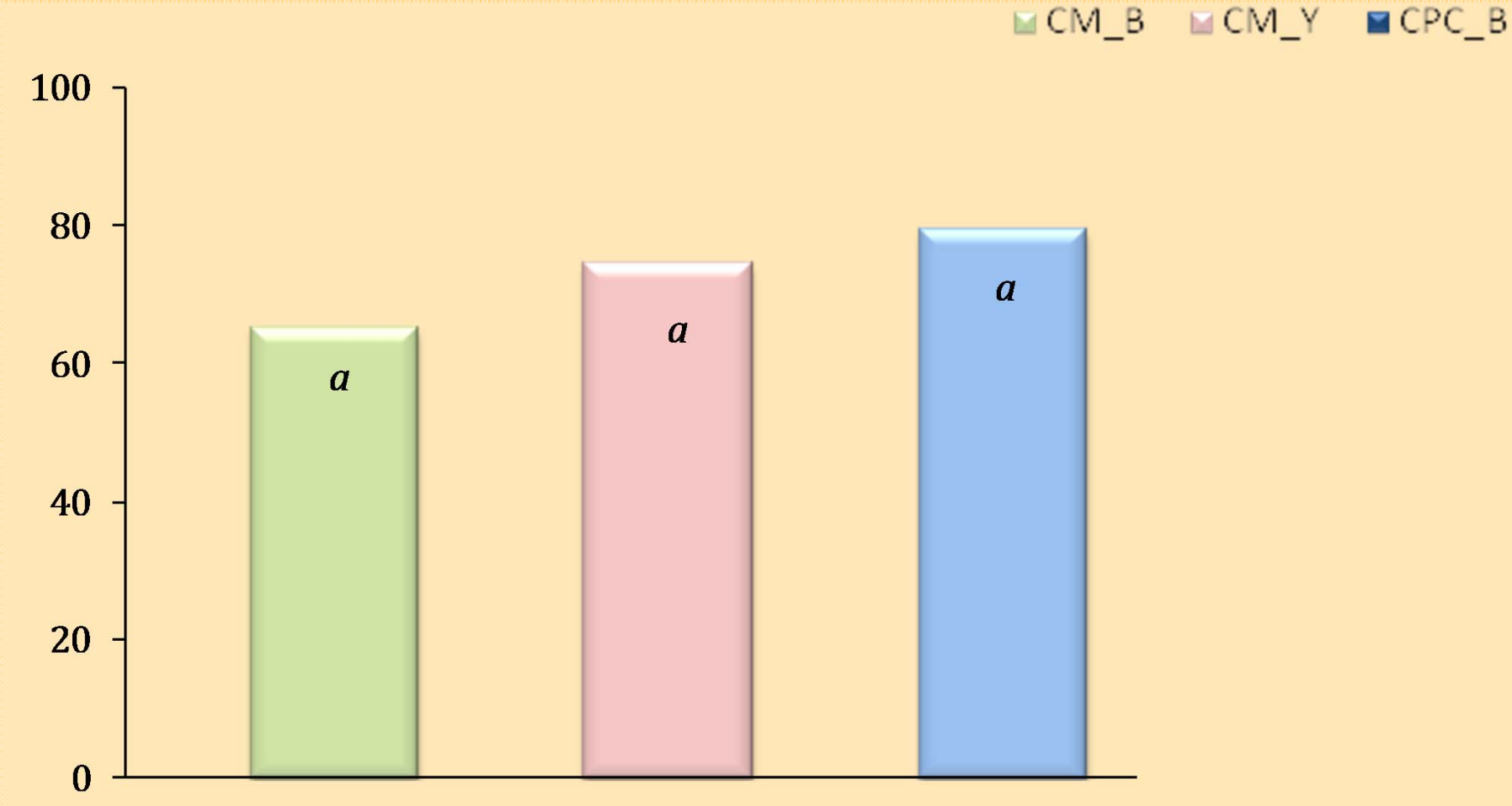


Part III

Metabolic Characteristics of Proteins and Energy in Dairy Cows

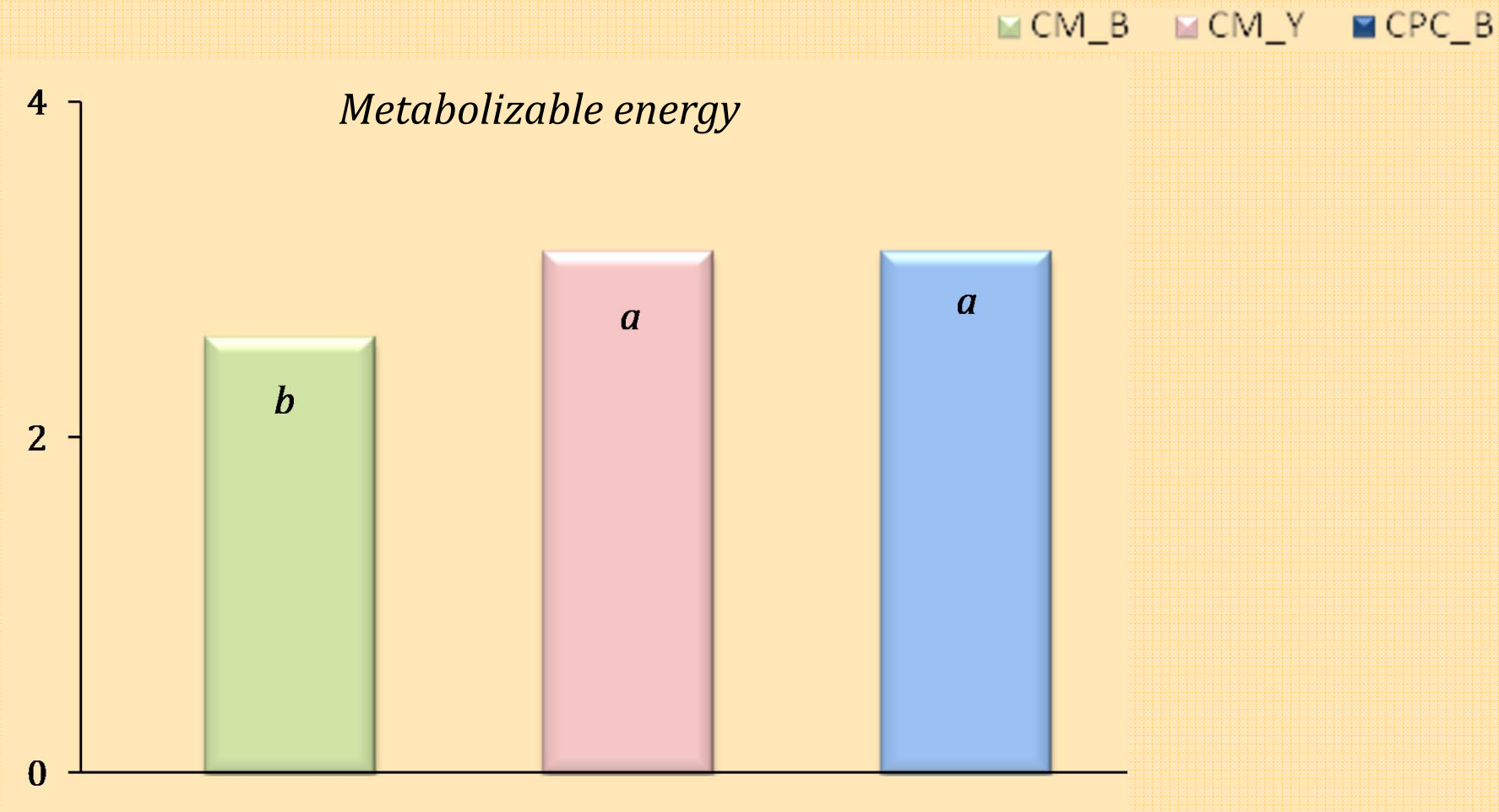
Results and Discussion

Total Digestible Nutrients (g/kg DM) of canola meals and presscake (TDN)



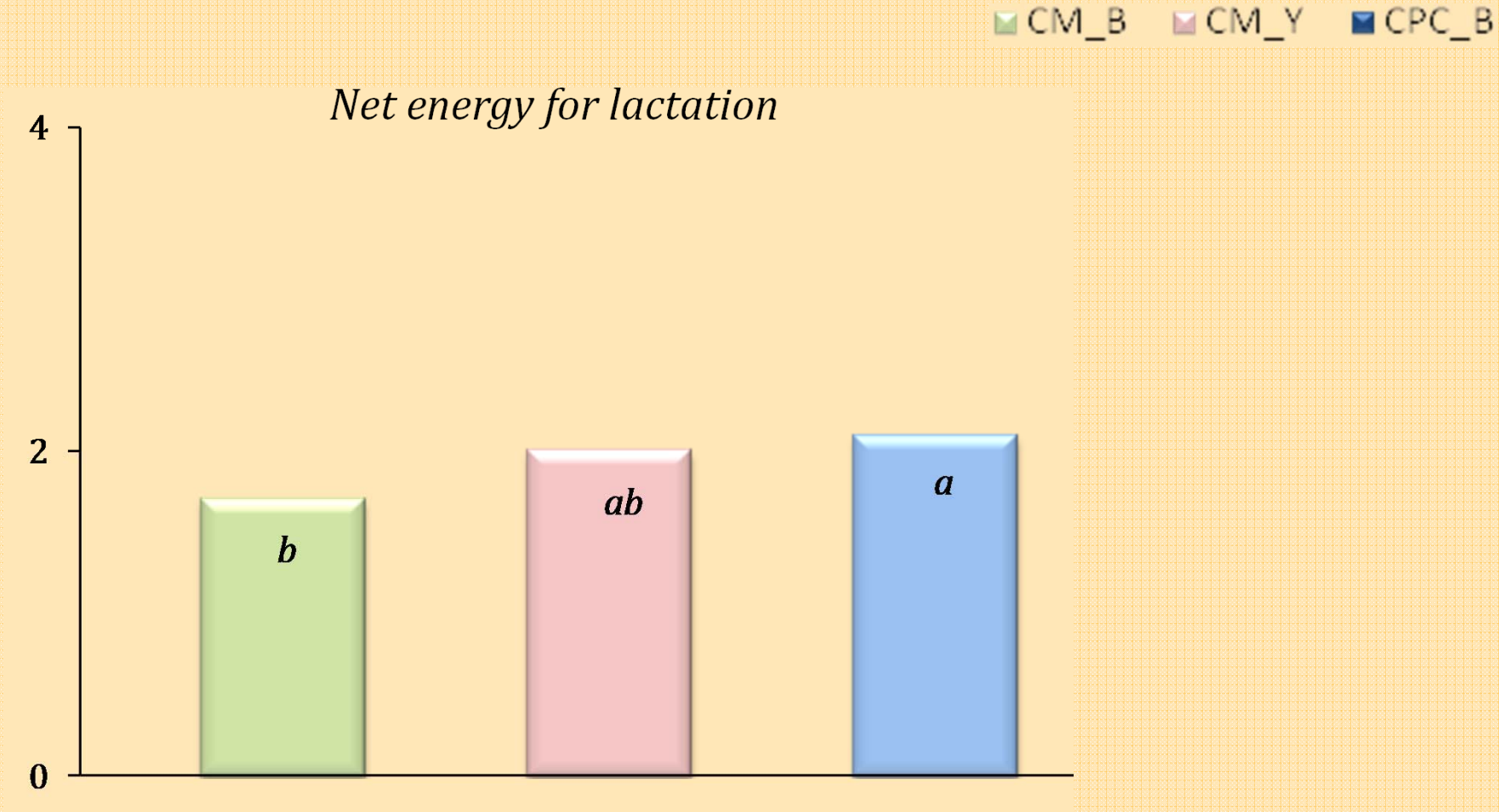
Results and Discussion

Energy values (MJ/kg DM) of canola meals and presscake



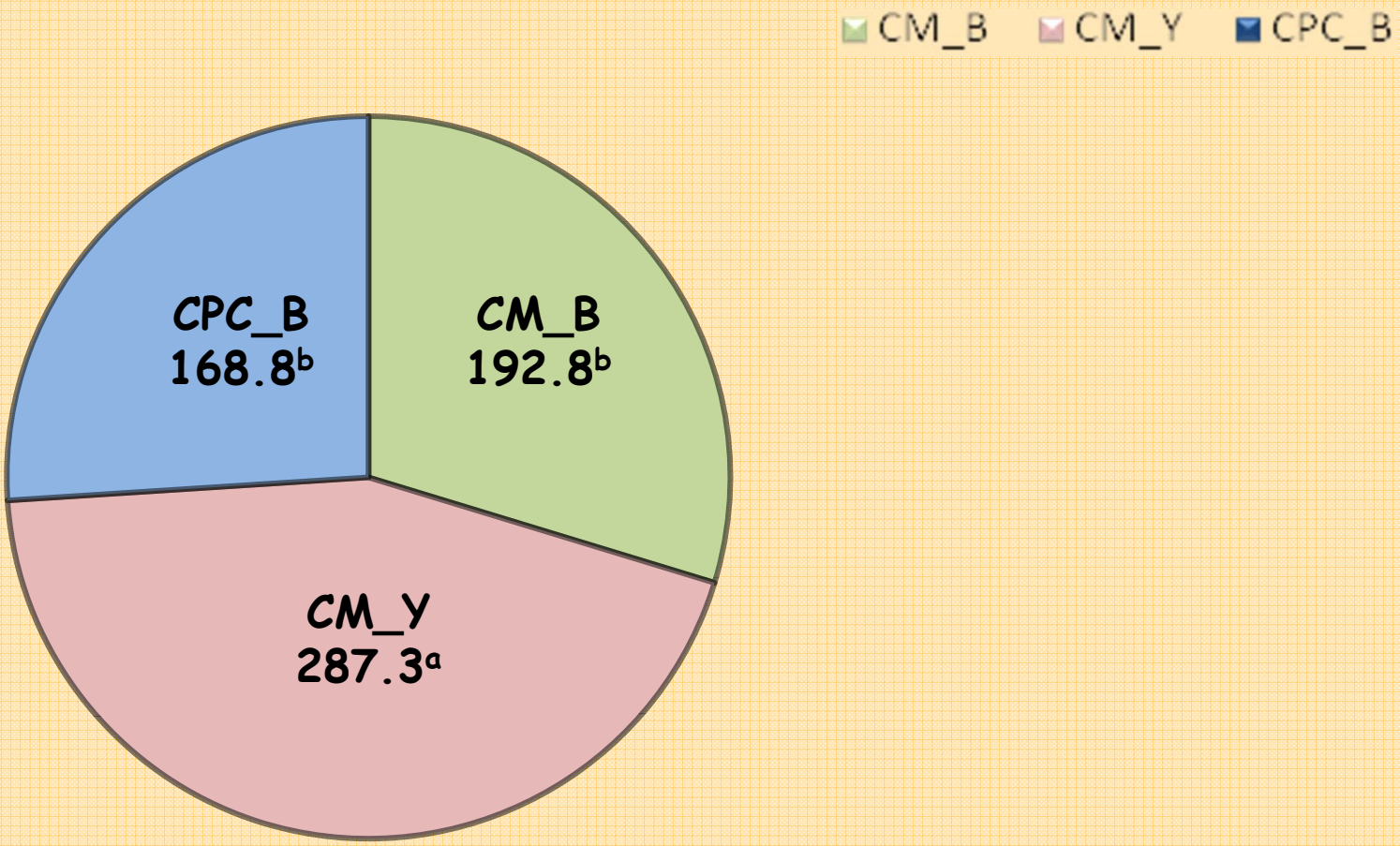
Results and Discussion

Energy values (MJ/kg DM) of canola meals and presscake



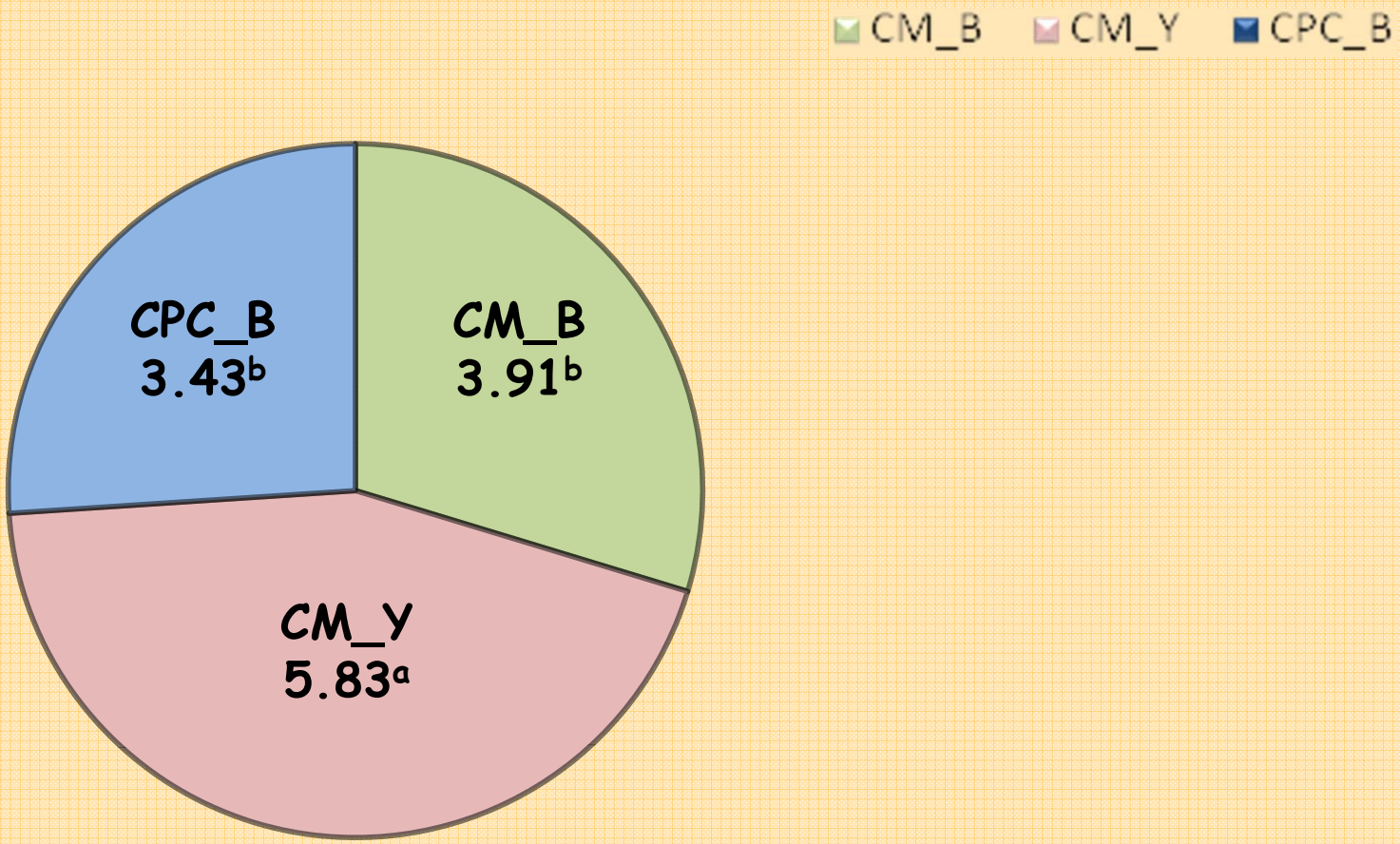
Results and Discussion

Metabolizable Protein (g/kg DM)



Results and Discussion

Feed Milk Value (kg milk / kg feed)



Take home messages

- Canola presscake has a lower protein content compared to canola meals.
- Canola presscake: great energy supplement source for dairy cattle.
- Crude protein and metabolizable energy are higher for yellow canola meal compared to brown canola meal.
- Yellow canola meal provides more available protein for absorption and utilization and has the highest feed milk value.

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