

α Amylase and α Glucosidase Enzyme Inhibitory Activities of Selected Millet Types and Sorghum Varieties of Sri Lanka

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INTRODUCTION

Diabetes mellitus, a chronic disease characterized by a raised blood glucose level is increasing worldwide. α-Amylase and α-glucosidase are key enzymes involved in the glucose metabolism. Functional foods with these enzyme inhibitory activity play an important role in preventing diabetes. Millets and sorghum are reported world over to have a range of health benefits including antidiabetic activity. But Sri Lankan studies on antidiabetic related properties of millets and sorghum are extremely limited.

Non Communicable Diseases (NCDs) including diabetes are increasing worldwide

71% global deaths are due to NCDs

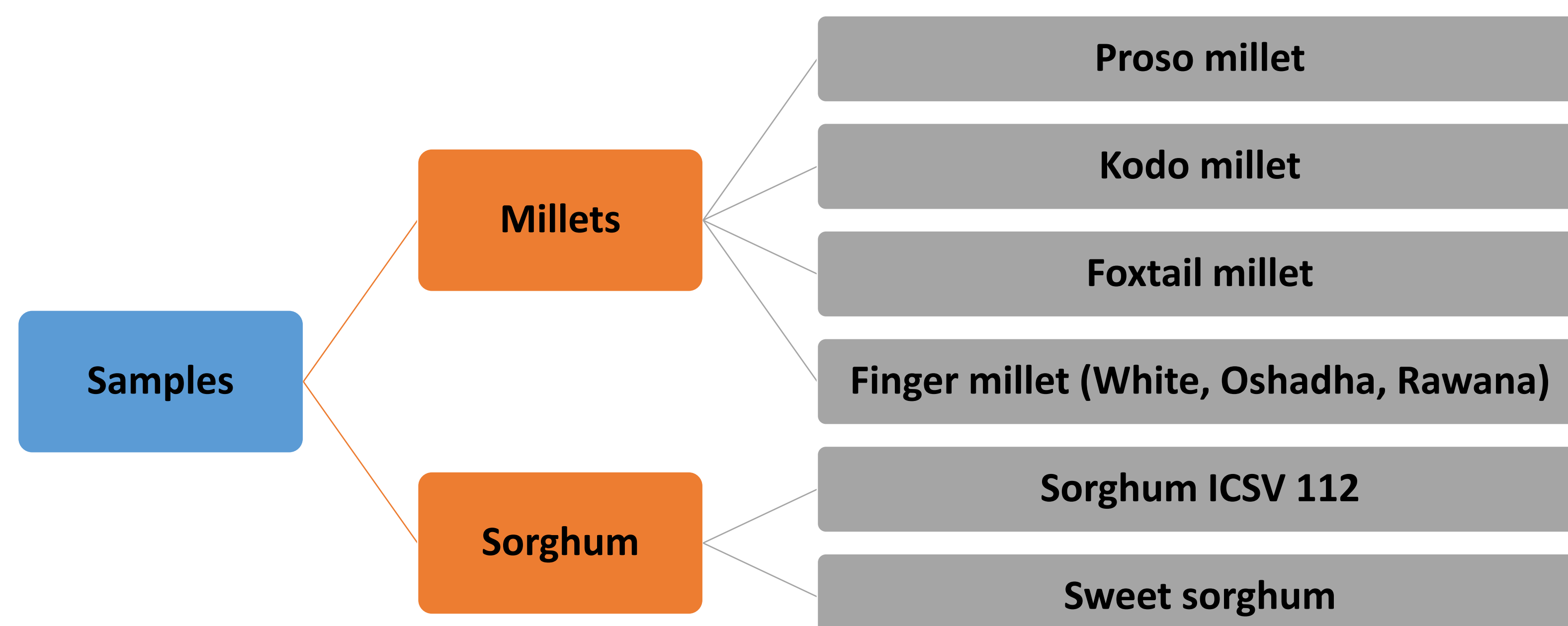
3/4th NCD deaths (31.5 million) occur in low and middle income countries

You are at risk...!!

In Sri Lanka; 10 % prevalence and 11.5 % pre-diabetes (1/4th population)

425 million diabetics worldwide in 2017 and 629 million in 2045

MATERIALS & METHODS

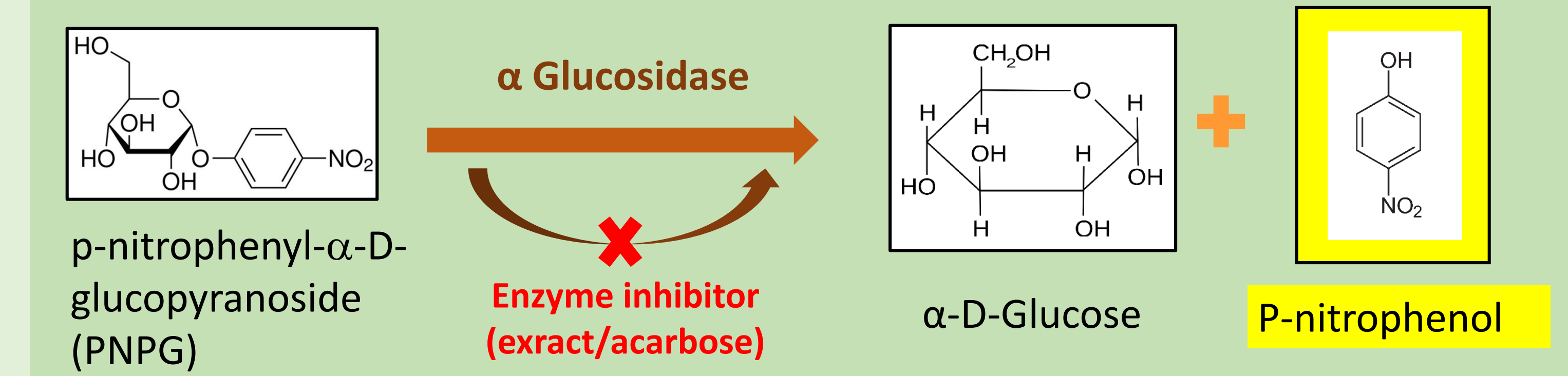
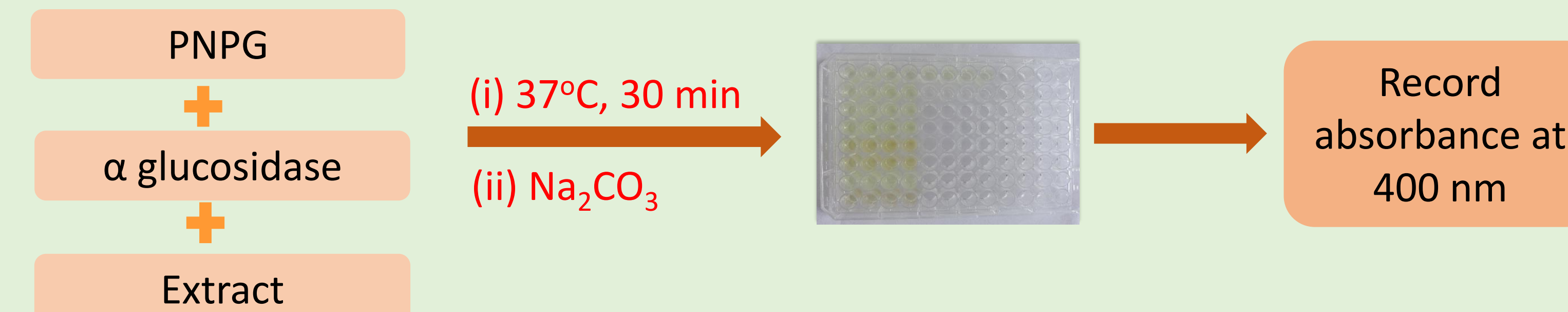


Sample Preparation & Extraction

- Whole grain powdered samples extracted in 100% methanol and dissolved in dimethyl sulfoxide (DMSO)
- DMSO stocks (extracts) were used in the assays

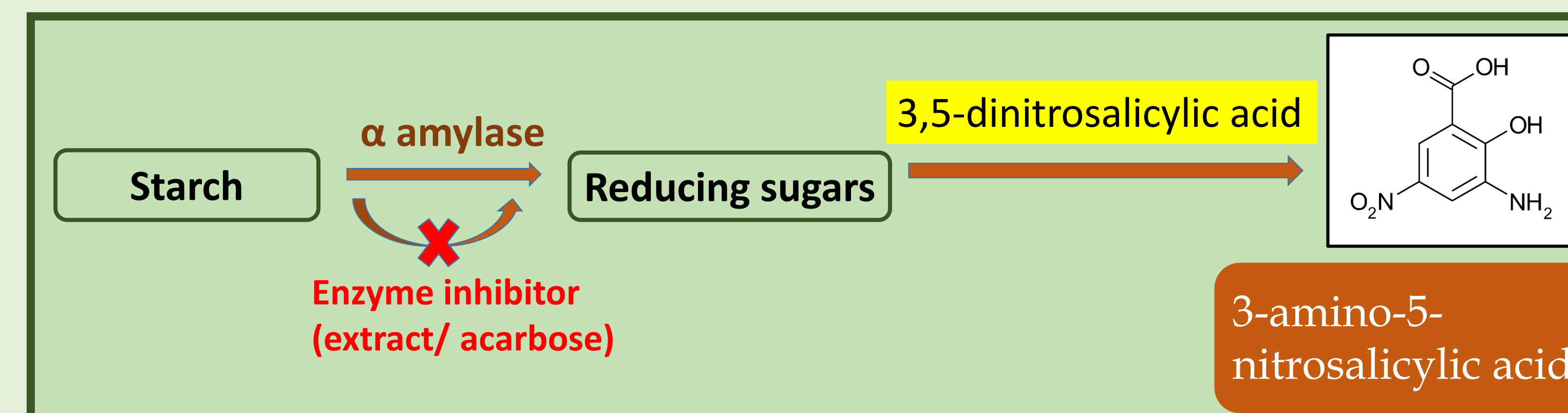
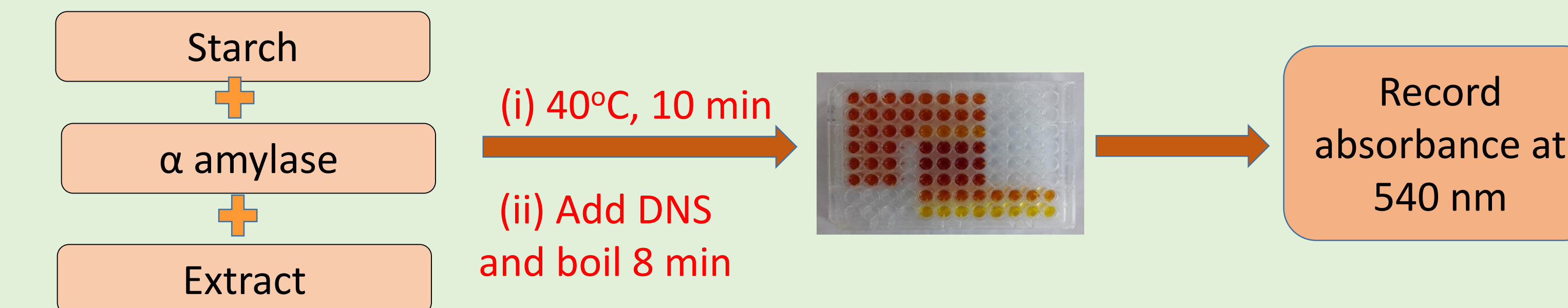
α-Glucosidase Inhibitory Activity

(Matsui *et al.*, 2001)

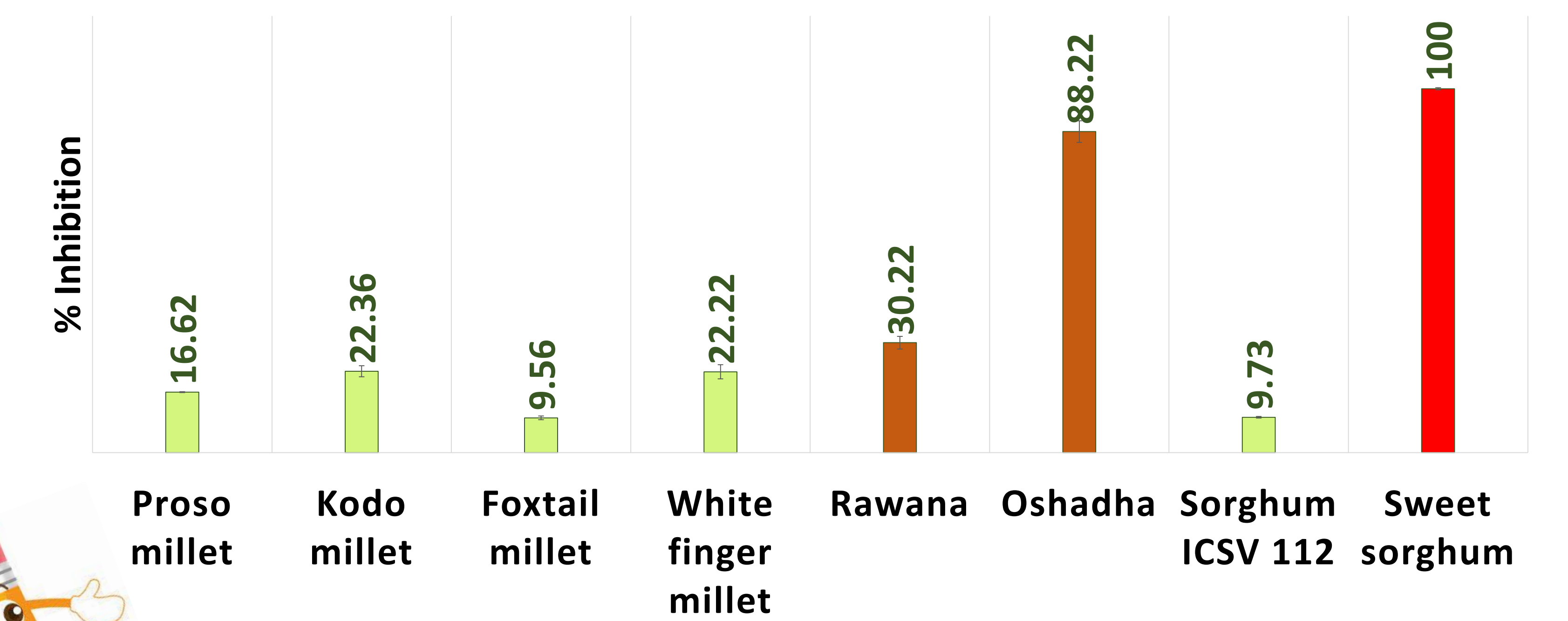


α-Amylase Inhibitory Activity

(Bernfeld, 1955)

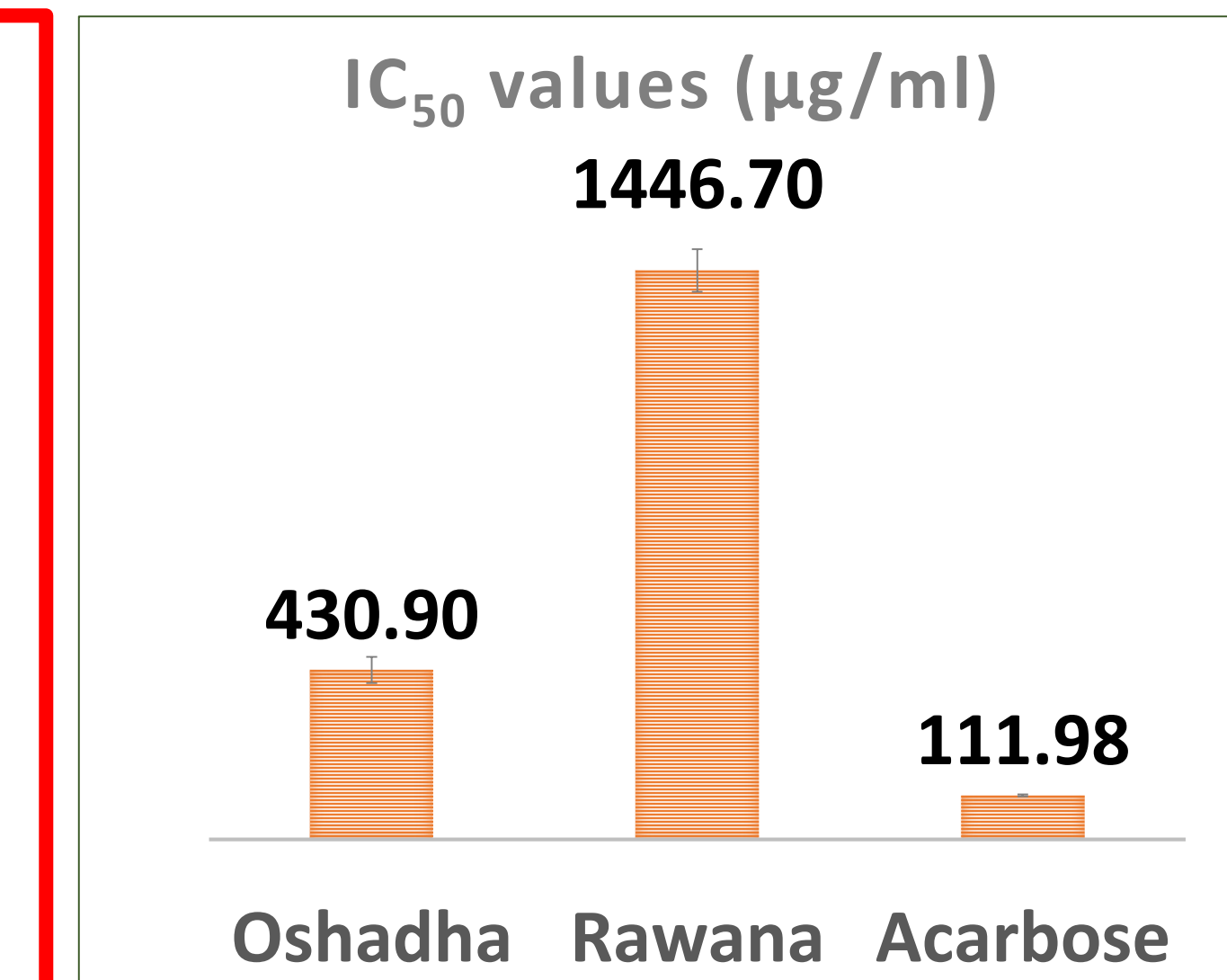
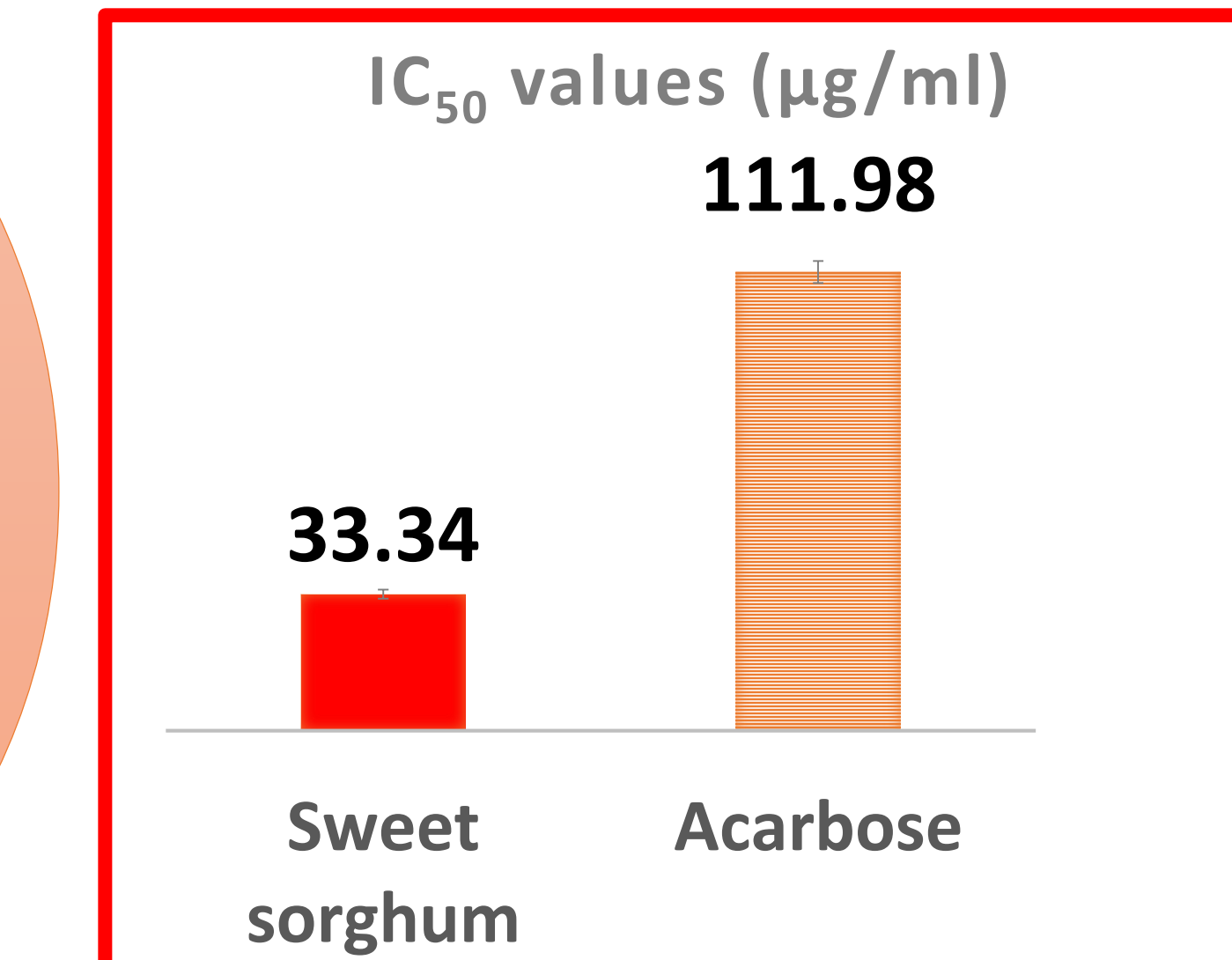


RESULTS & DISCUSSION



Surprising facts....!!

Sweet sorghum was nearly 4 times potent than the reference drug in inhibiting α amylase enzyme



CONCLUSION

- There was no α Glucosidase inhibitory activity in any sample
- α Amylase inhibitory activity was detected with varying degrees of potentials.
- **Order of potency:**

Sweet sorghum > Oshadha > Rawana

- Findings of this study indicate the potential of using millet and sorghum as functional cereals in formulating **functional foods and nutraceuticals** for the prevention of diabetes

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