

Comparative analysis of γ -Oryzanol profiles in the bran of exotic rice varieties

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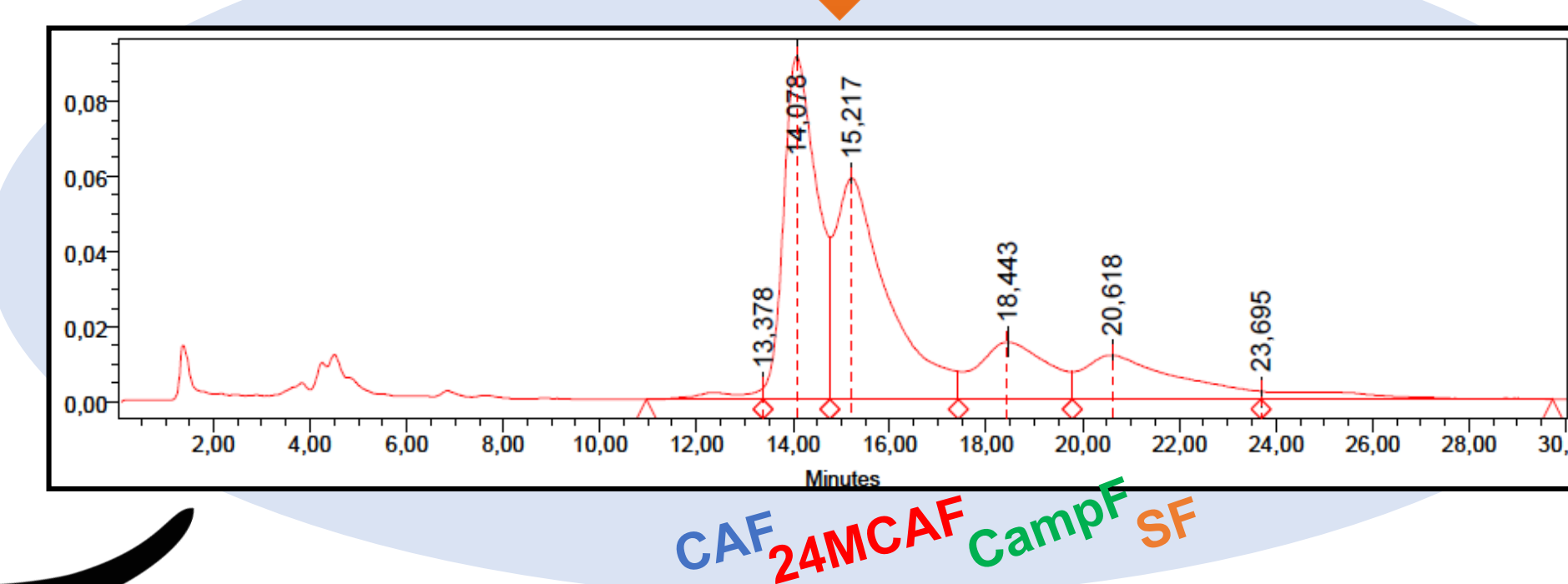
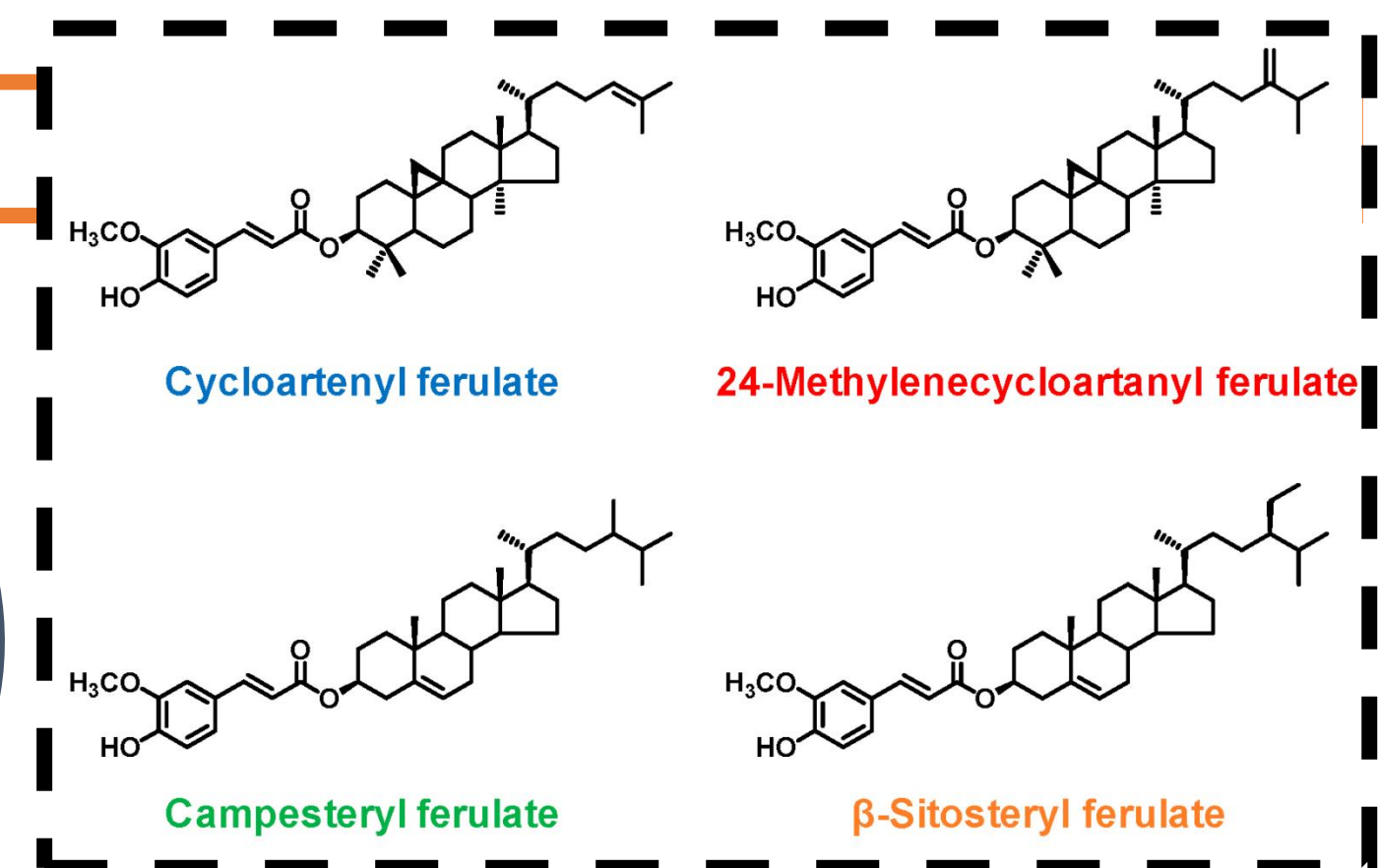
INTRODUCTION

γ -Oryzanol (ORY) is a bioactive compound found in the rice bran lipid fraction, known for its significant health benefits [1]. Structurally ORY is a mixture of ferulic acid esterified with phytosterols and triterpene alcohol, where the main four compounds account 95% of ORY (figure 1). Pharmacokinetic studies in rats have shown the presence of intact ORY in the bloodstream post-administration indicating its bioavailability [2]. Each component of ORY exhibits unique bioactive effects; for instance, 24MCAF, the predominant compound has demonstrated a strong inhibitory effect on tumor cells growth, potentially due to its antioxidant properties [3]. Identifying and quantifying individual ORY compounds becomes important for determining the bioactive profiles of different rice varieties which is beneficial for breeding programs aimed at enhancing specific health benefits.



EXOTIC RICE VARIETIES

DIFFERENT γ -ORYZANOL PROFILES



Antioxidant properties

Figure 1- γ -Oryzanol structurally compounds

OBJECTIVE

This study explores the variability of ORY compounds in the bran of 7 exotic rice varieties (table 1) sourced from International Germplasm Bank (IRRI). These varieties differ in type, shape, and color as well as in their genetic background [4,5]. High-resolution liquid chromatography (HPLC) was used to quantify the ORY content and its four main components [6].

Table 1- γ -Oryzanol total content (mg/100g) in rice bran varieties

Rice bran variety	Origin Country	γ -Oryzanol (mg/100g)
Ballatinao	Philippines	329.71 \pm 6.38 a
Maluit	Philippines	59.09 \pm 1.00 e
Dinorado	Philippines	280.83 \pm 0.20 b
Arabon	Philippines	219.17 \pm 4.24 c
Bora	Italy	169.08 \pm 0.48 d
NSICRC9	Philippines	170.25 \pm 4.28 d
Azucena	Philippines	212.61 \pm 0.27 c

RESULTS AND DISCUSSION

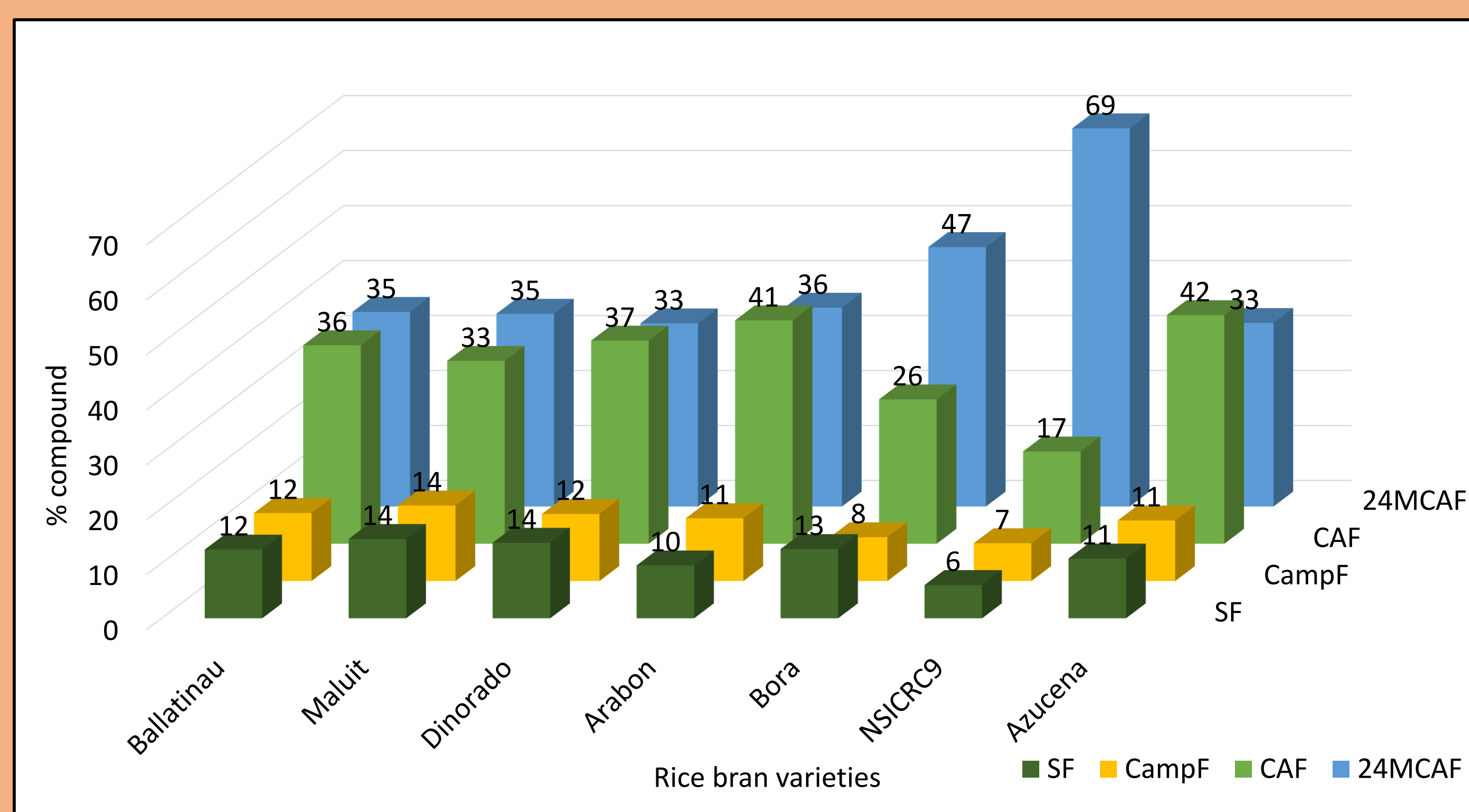


Figure 2- γ -Oryzanol compounds (%) of rice bran varieties

Significant differences ($p < 0.05$) were found among ORY compounds (figure 2), across the rice varieties. The Azucena and Arabon varieties exhibited the highest CAF content at 40.6% and 41.6% respectively. The NSICRC9 variety was notable for its high 24MCAF content (68.8%), followed by Bora variety with (47.2%). For CampF and SF, the Maluit variety stood out with 13.7% and 14.4% respectively. The NSICRC9 variety showed the lowest levels of CAF (16.7%), CampF (6.9%) and SF (6.1%).

CONCLUSION

In conclusion, distinct ORY profiles were identified among different rice varieties highlighting the potential for selecting rice varieties based on their bioactive compound profiles. These findings could inform breeding programs aimed at enhancing specific health benefits through targeted ORY profiles.

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