Bioactive potential of preparations made from various medicinal mushrooms in terms of their polyphenolic and polysaccahrides content

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INTRODUCTION

Owing to their widespread use in traditional medicine of east-Asian countries, medicinal mushrooms have become the focus of extensive scientific research

Numerous studies have proven the preventive and therapeutic properties of many mushroom species on various diseases

Consumption of mushrooms contributes human diet

- lipids
- dietary fibers
- polysaccharides

Mushrooms also provide a significant content of bioactive compounds

- minerals
- vitamins
- polyphenols

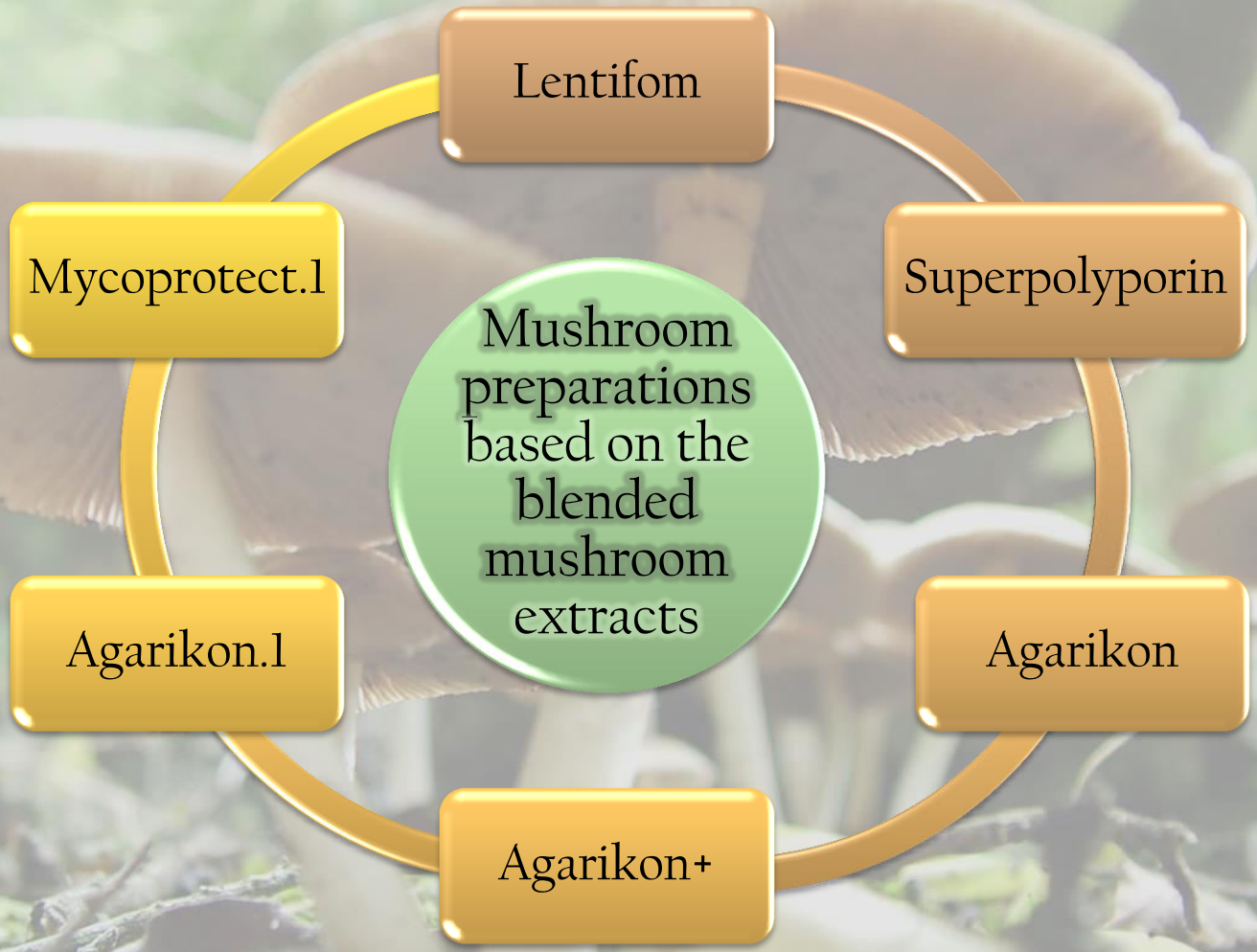
SCOPE

Due to the diversity of mushrooms species, chemical composition and the content of phytochemicals in different mushrooms differ significantly

In order to enable their further use in medicinal purposes, there is a need for an characterisation of bioactive substances in medicinal mushrooms

Therefore, the scope of this study was to determine polyphenolic and polysaccharide content in products based on medicinal mushrooms, as well as their antioxidant capacity

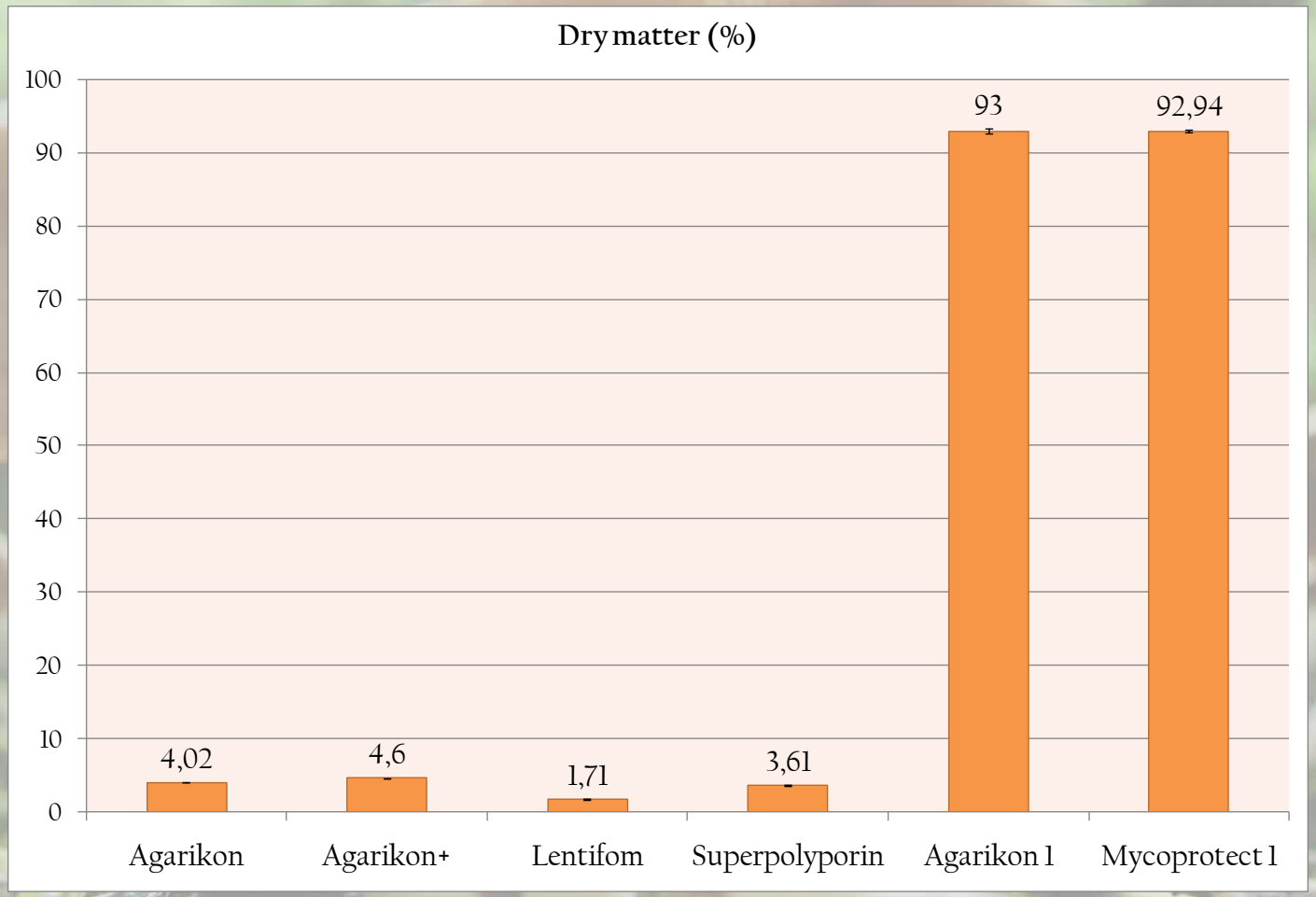
SAMPLES


Mushroom preparations based on the blended mushroom extracts
Lentifom
Superpolyporin
Agarikon
Agarikon+
Agarikon.l
Mycoprotect.l

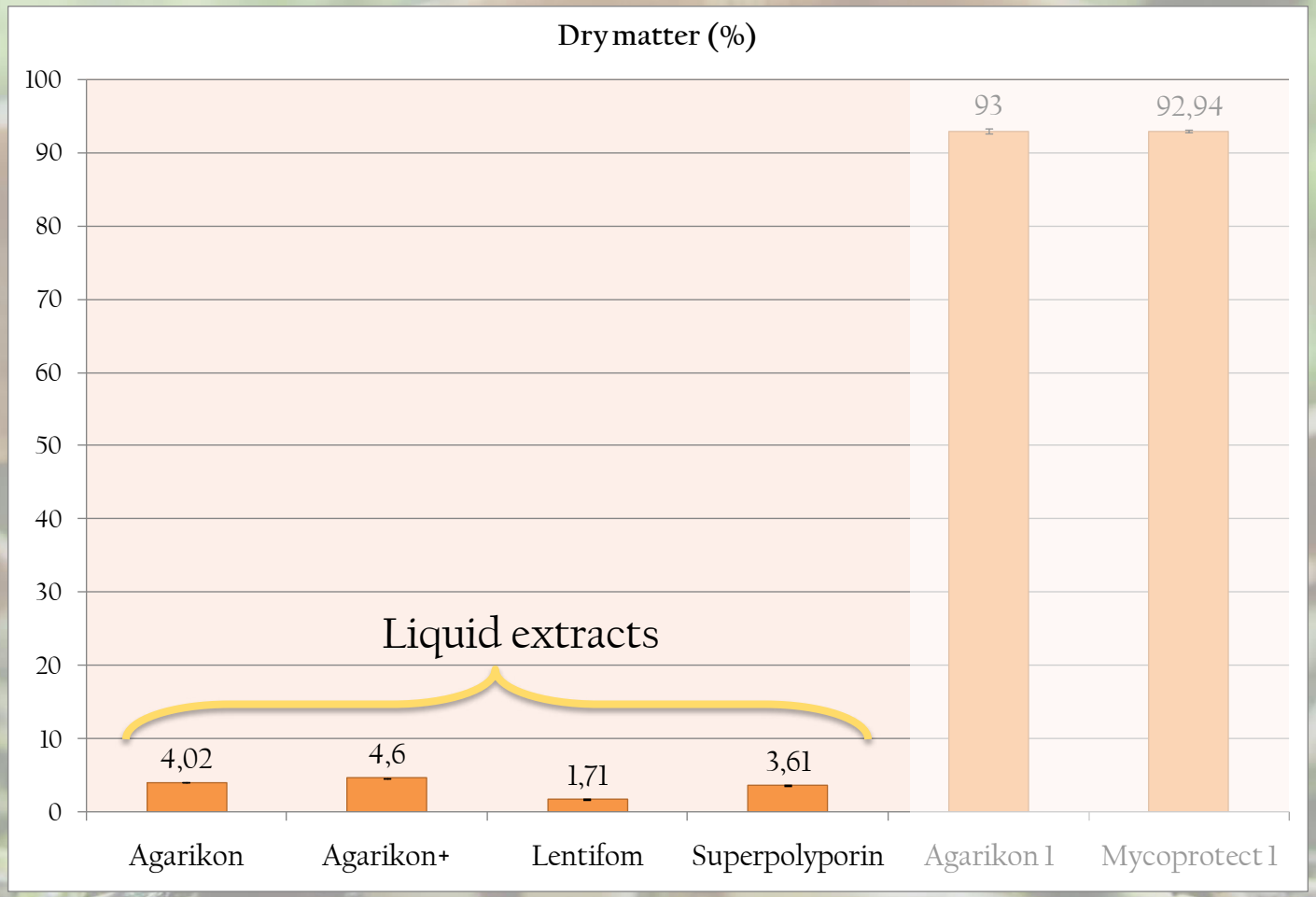
METHODS

Content of phenolic compounds (UV/Vis spectrophotometric methods)	• Total phenols • Total flavonoids
Antioxidant capacity (UV/Vis spectrophotometric methods)	• ABTS (2,2`-azino-bis(3-ethylbenzthiazoline-6-sulphonic acid) • FRAP (ferric reducing/antioxidant power) assays
Content of polysaccharides (gravimetric method)	• Total polysaccharides

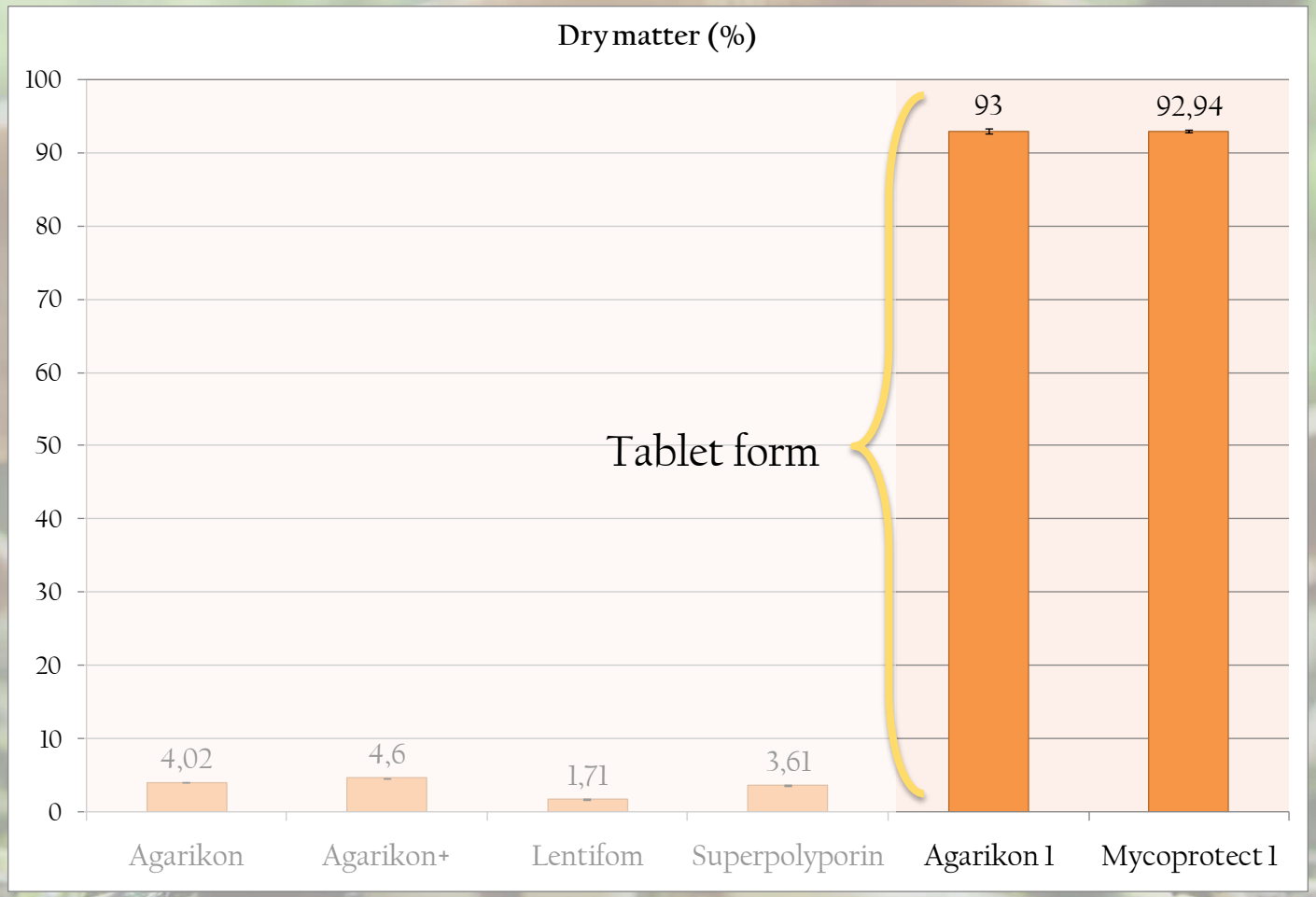
RESULTS


Dry matter (%)
100
90
80
70
60
50
40
30
20
10
0
4,02
4,6
1,71
3,61
93
92,94
Agarikon
Agarikon+
Lentifom
Superpolyporin
Agarikon 1
Mycoprotect 1

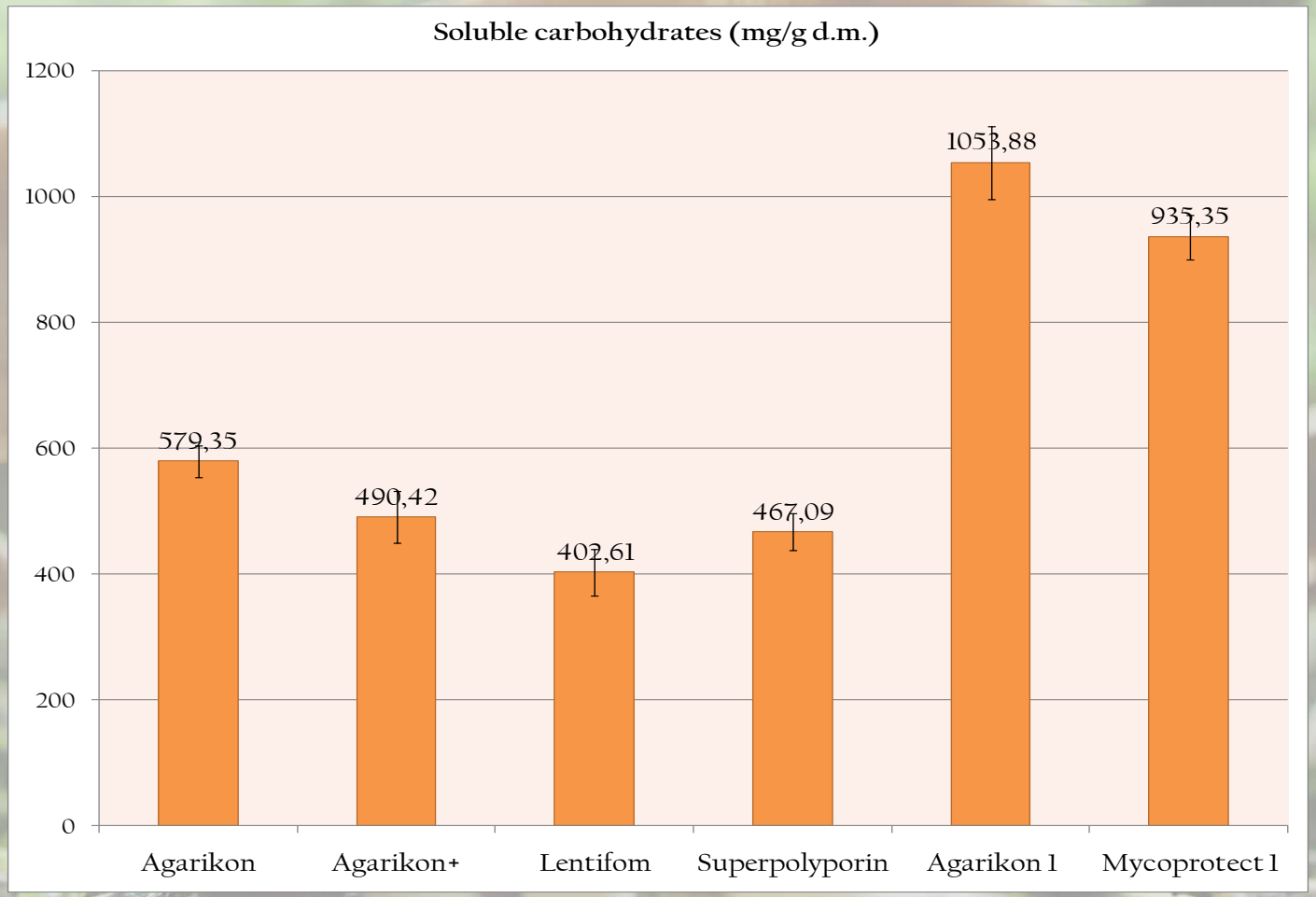
RESULTS


Dry matter (%)
100
90
80
70
60
50
40
30
20
10
0
Liquid extracts
4,02
4,6
1,71
3,61
93
92,94
Agarikon
Agarikon+
Lentifom
Superpolyporin
Agarikon 1
Mycoprotect 1

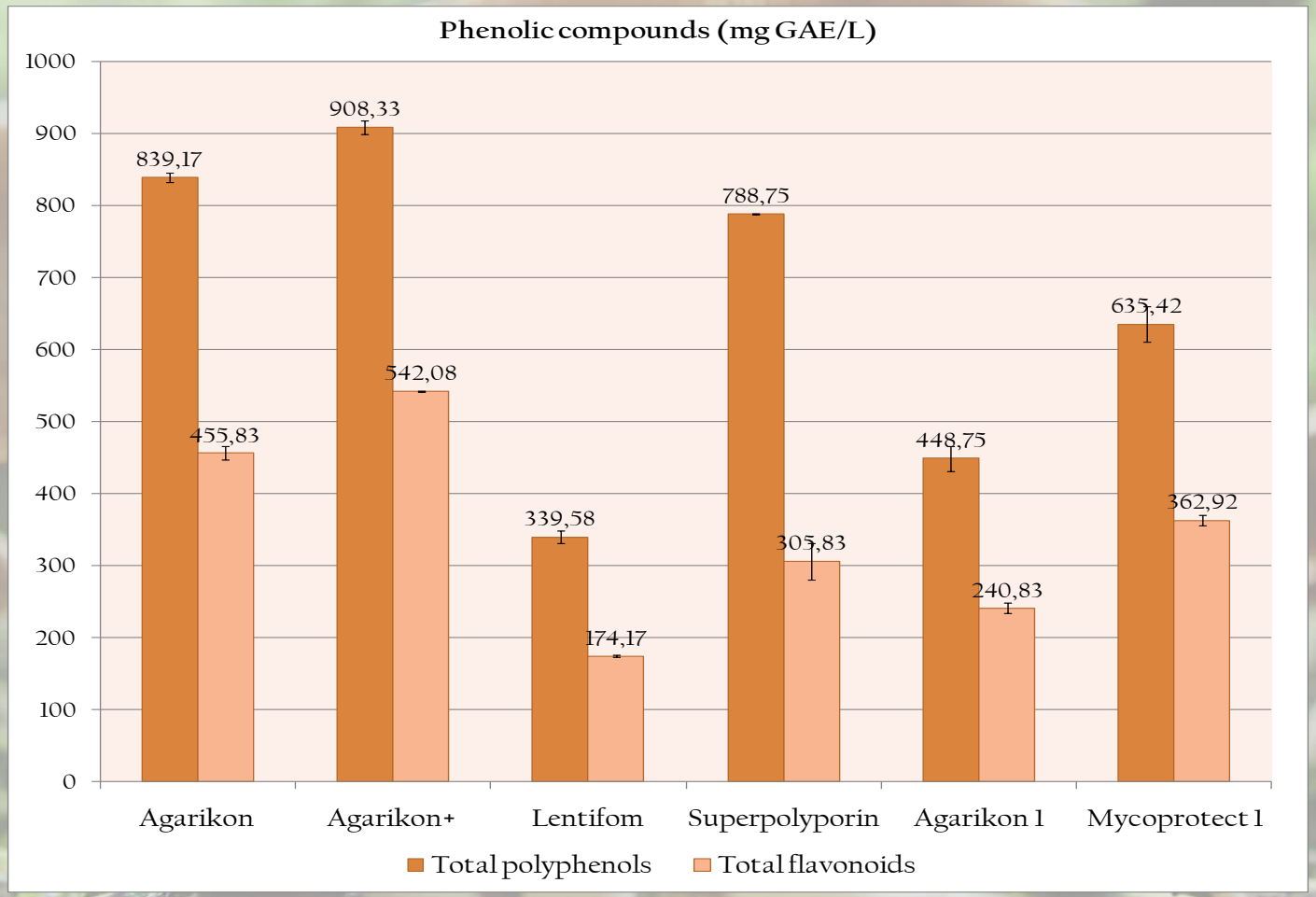
RESULTS


Dry matter (%)
100
90
80
70
60
50
40
30
20
10
0
4,02
4,6
1,71
3,61
93
92,94
Tablet form
Agarikon
Agarikon+
Lentifom
Superpolyporin
Agarikon 1
Mycoprotect 1

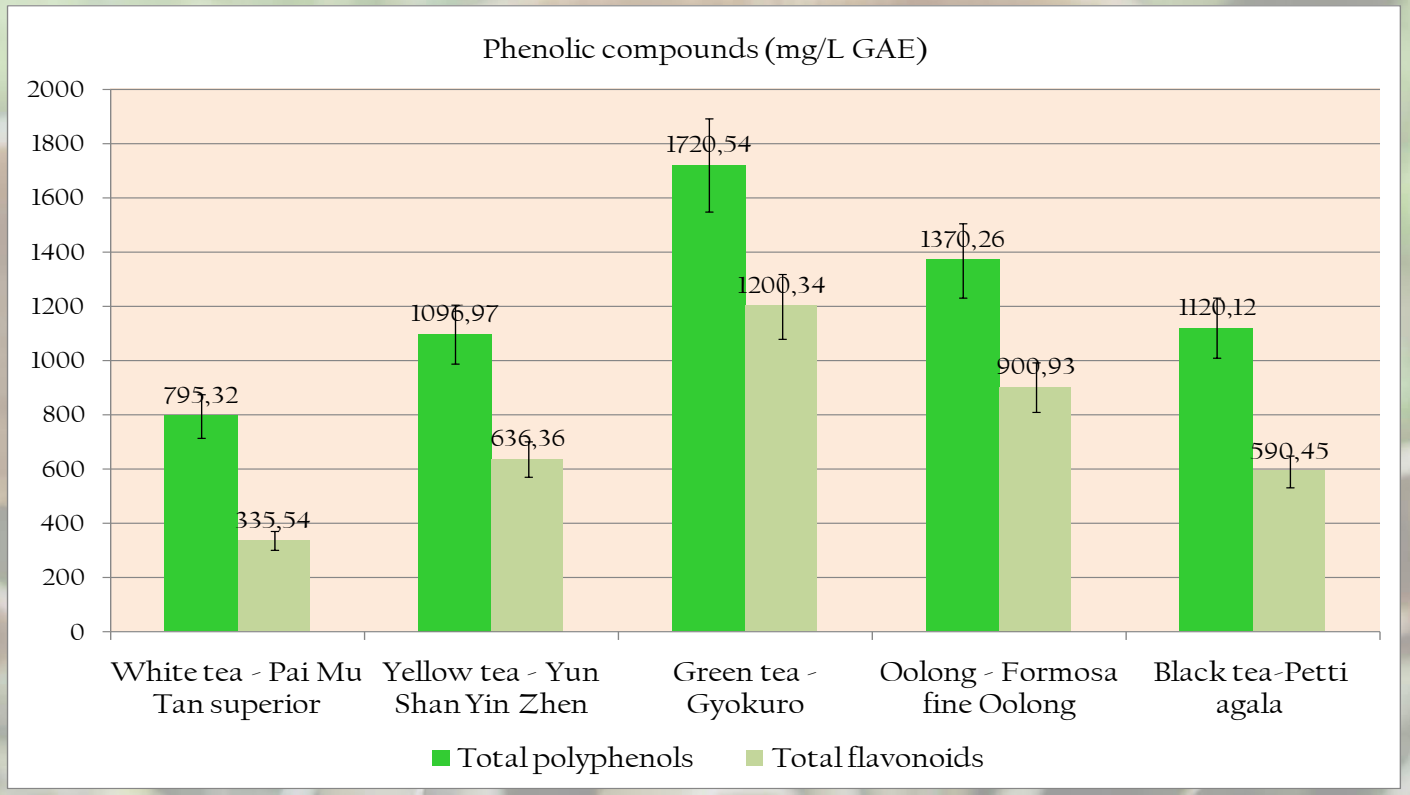
RESULTS


Soluble carbohydrates (mg/g d.m.)
1200
1000
800
600
400
200
0
579,35
490,42
402,61
467,09
1053,88
935,35
Agarikon
Agarikon+
Lentifom
Superpolyporin
Agarikon 1
Mycoprotect 1

RESULTS

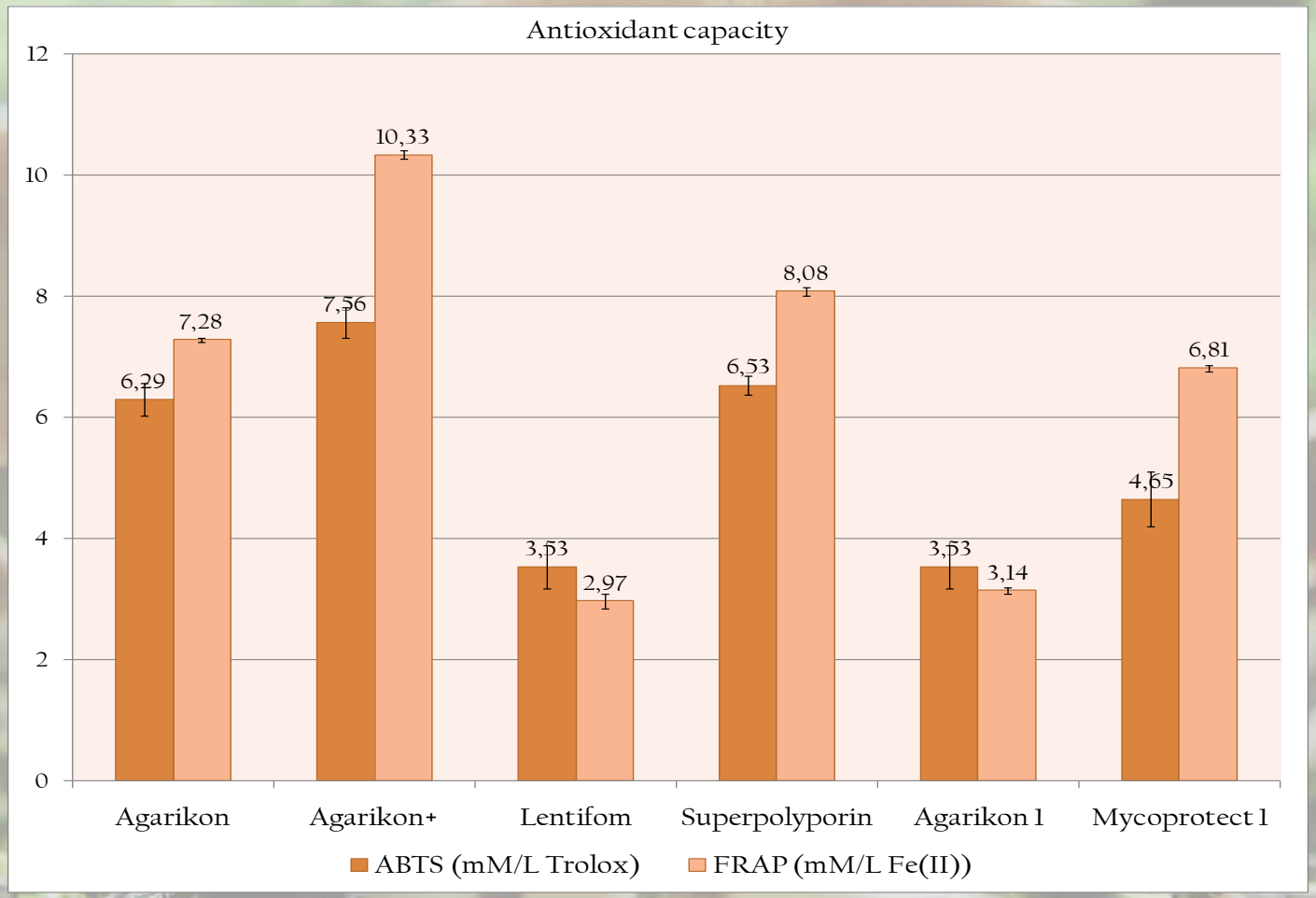

Phenolic compounds (mg GAE/L)
1000
900
800
700
600
500
400
300
200
100
0
839,17
455,83
908,33
542,08
339,58
174,17
788,75
305,83
448,75
240,83
635,42
362,92
Agarikon
Agarikon+
Lentifom
Superpolyporin
Agarikon 1
Mycoprotect 1
Total polyphenols
Total flavonoids

RESULTS*

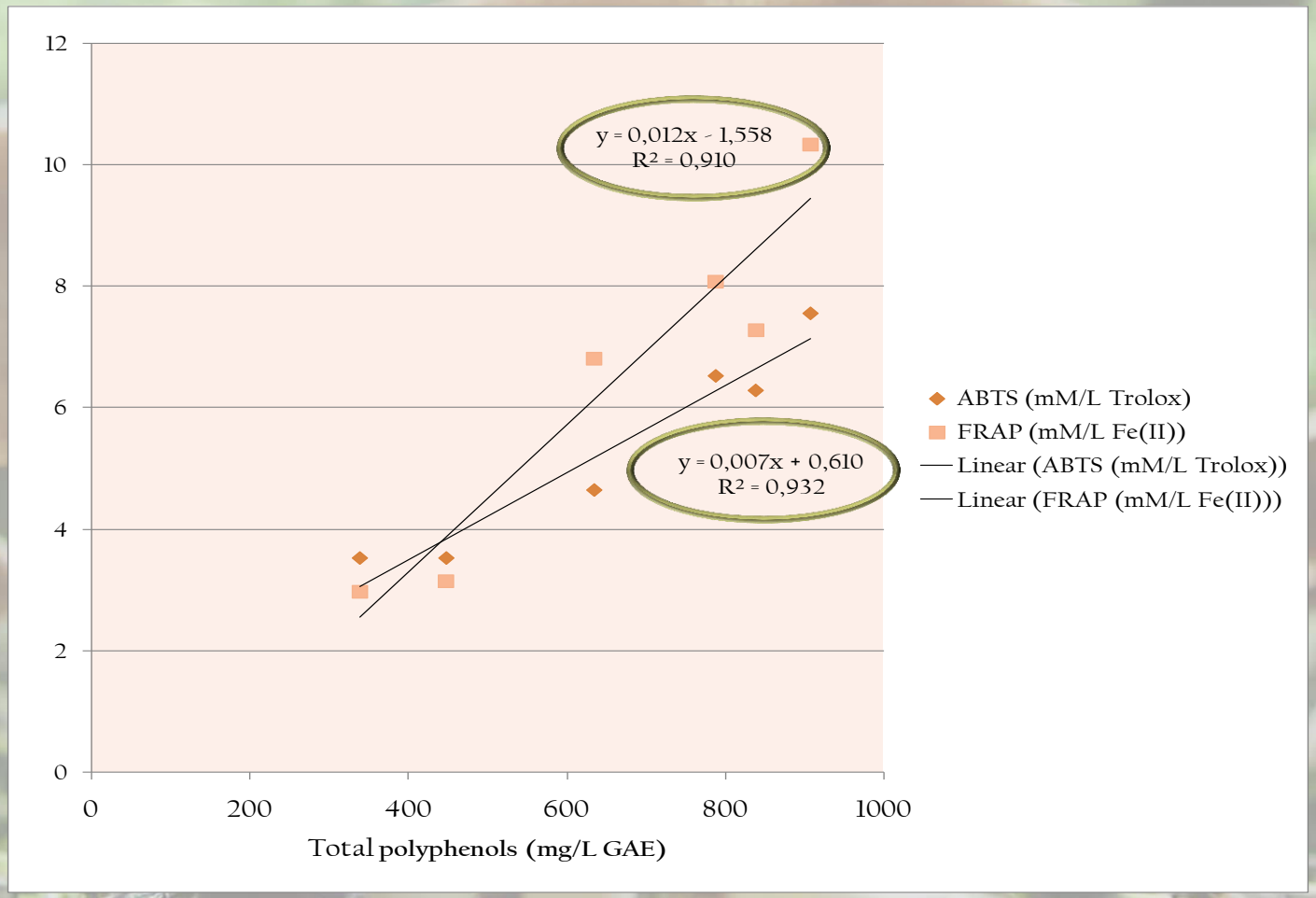


*Komes, Horžić, Belščak, Kovačević Ganić, Vulić (2010) Food Res.Int. 43, 167–176.
*Horžić, Komes, Belščak, Kovačević Ganić, Iveković, Karlović (2009) Food Chem. 115, 441–448.
*Rusak, Komes, Likić, Horžić, Kovač (2008) Food Chem. 110, 852–858.

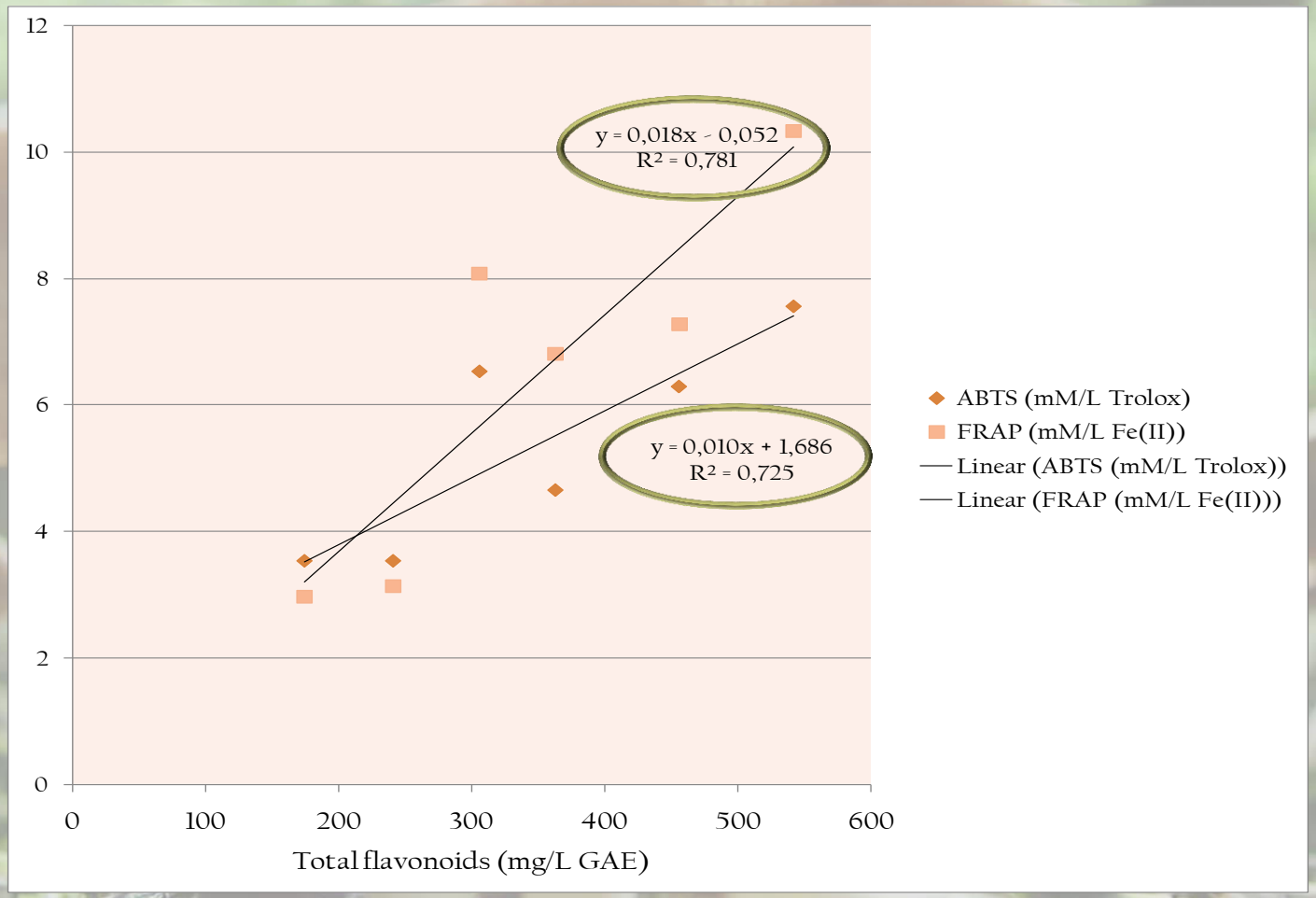
RESULTS


Antioxidant capacity
12
10
8
6
4
2
0
6,29
7,28
7,56
10,33
3,53
2,97
6,53
8,08
3,53
3,14
4,65
6,81
Agarikon
Agarikon+
Lentifom
Superpolyporin
Agarikon 1
Mycoprotect 1
ABTS (mM/L Trolox)
FRAP (mM/L Fe(II))

RESULTS


12
10
8
6
4
2
0
0
200
400
600
800
1000
Total polyphenols (mg/L GAE)
y = 0,012x - 1,558
R² = 0,910
y = 0,007x + 0,610
R² = 0,932
ABTS (mM/L Trolox)
FRAP (mM/L Fe(II))
Linear (ABTS (mM/L Trolox))
Linear (FRAP (mM/L Fe(II)))

RESULTS


12
10
8
6
4
2
0
0
100
200
300
400
500
600
Total flavonoids (mg/L GAE)
y = 0,018x - 0,052
R² = 0,781
y = 0,010x + 1,686
R² = 0,725
ABTS (mM/L Trolox)
FRAP (mM/L Fe(II))
Linear (ABTS (mM/L Trolox))
Linear (FRAP (mM/L Fe(II)))

CONCLUSIONS

1.) Products based on medicinal mushrooms show relatively high content of polyphenolic compounds, with the highest content of total polyphenols and total flavonoids measured in Agarikon +

2.) Antioxidant capacity of mushroom based products showed very high correlation to the both total polyphenol and total flavonoid content

3.) The highest content of soluble carbohydrates was detected in Agarikon.1 and Mycoprotect.1 suspensions

4.) Based on the obtained results, analyzed products present a good source of bioactive compounds

Thank you for your attention