

POLYPHENOLS AND FLAVONOIDS CONTENTS IN SEED CAKE FROM SERBIA CONFECTIONARY SUNFLOWER (*Helianthus Annuus L.*)

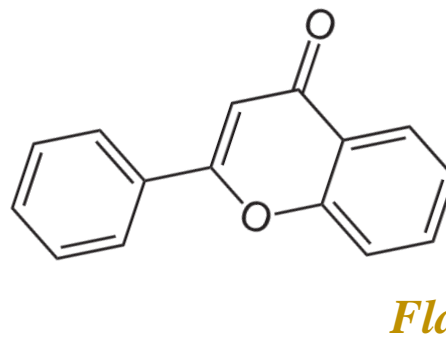
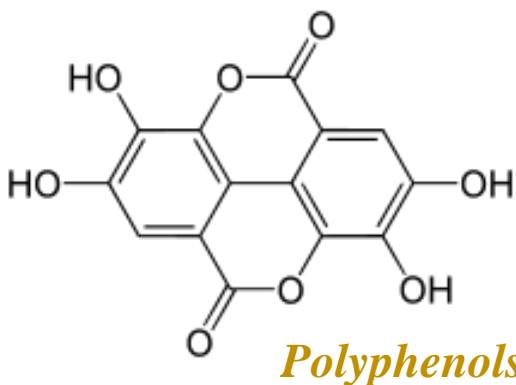
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- ❖ **Polyphenols and flavonoids** - *compounds with high antioxidant activity.*
- ❖ **Favorable effects on human health:** *anti-cancer, anti-inflammation, anti-allergenic, anti-microbial and anti-atherogenic actions.*
- ❖ **Sources:** *plants, including wastes from various food industries.*
- ❖ **Sunflower seed cake** – *by-product of cold pressed sunflower oils.*
- ❖ **Exploitation** *for isolation of various bioactive compounds*



Experimental

Results

- Folin-Ciocalteu assay,
- Colorimetric method with $AlCl_3$.
- 80% ethanol and ultrasound-assisted extraction at 30°C for 30 minutes.

Figure 1. Calibration curves: a) Polyphenols
b) Flavonoids

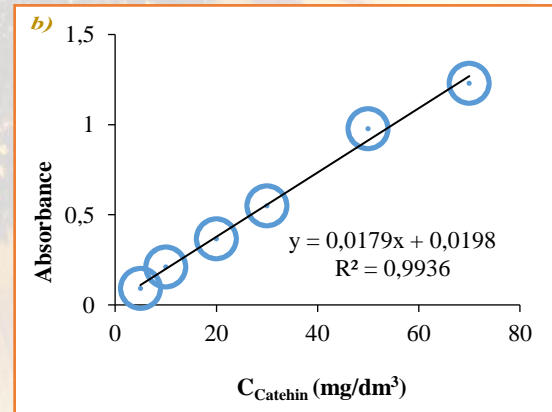
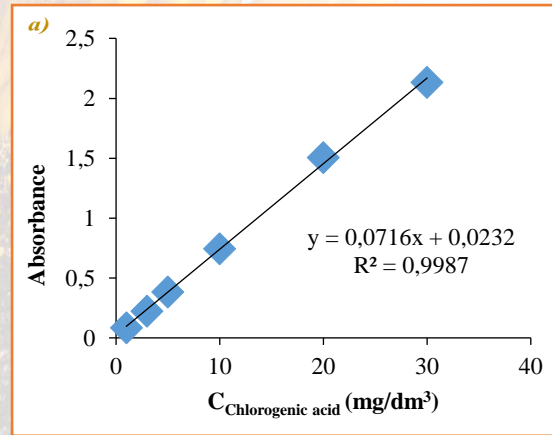


Table 1. Contents of polyphenols and flavonoids in sunflower seed cakes

Sample	Content of total polyphenols (mg $CGA_E/100 \text{ g d.m.}$) ^a	Content of flavonoids (mg $CAT_E/100 \text{ g d.m.}$) ^a
1	536.15±5.67	403.10±10.40
2	669.18±12.43	303.33±10.28
3	623.27±10.47	356.88±9.89
4	559.52±9.54	327.21±6.22
5	644.73±12.38	344.96±5.47
6	705.33±14.64	425.30±11.65
7	731.46±13.98	497.38±0.74
8	725.38±14.06	560.95±17.98
9	669.31±11.72	615.52±13.14
10	535.98±11.00	647.03±16.32
11	806.24±17.86	453.04±9.98
12	740.72±13.54	583.53±8.98
13	785.59±15.55	723.44±16.43
14	872.40±16.87	698.66±14.57
15	695.76±12.22	614.42±13.65
16	663.97±11.07	641.15±12.99
17	782.63±14.44	496.04±13.02
18	639.59±6.84	528.43±7.89
19	744.75±19.82	691.53±12.65
20	810.58±22.43	770.53±19.87

^amean ± SD, n=3.

Conclusions

- Total polyphenols contents: from 535.9 to 872.4 mg of chlorogenic acid equivalent/100 g d.m.
- Flavonoid content: from 303.3 to 770.5 mg of catechine equivalent/100 g d.m.
- Sunflower seed cakes obtained from cold pressed oil production is valuable by-product and can be used as a source for isolation of compounds with high antioxidant activity such as polyphenols and flavonoids.
- Proper valorization of sunflower seed cake is beneficial from both economic and environmental aspects.