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Chemical Constituents And Antioxidant Activity Of *Fraxinus Xanthoxyloides* Leaves Extract

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INTRODUCTION

The genus *Fraxinus* L. belongs to the Oleaceae family and comprises of about 43 species. The occurrence of coumarins, secoiridoids and phenylethanoids is a characteristic feature of this *Fraxinus* species. However, no phytochemical investigation has been carried out on the Algerian *Fraxinus* species to date. In the present work, we report the chemical constituents of the leaves and estimate the antioxidant potential.

Traditional use

Fraxinus species have been used in folk medicine in different parts of the world for:

- Treatment of constipation
- Rheumatic pain
- Diuretic and mild purgative effects.

Fraxinus xanthoxyloides

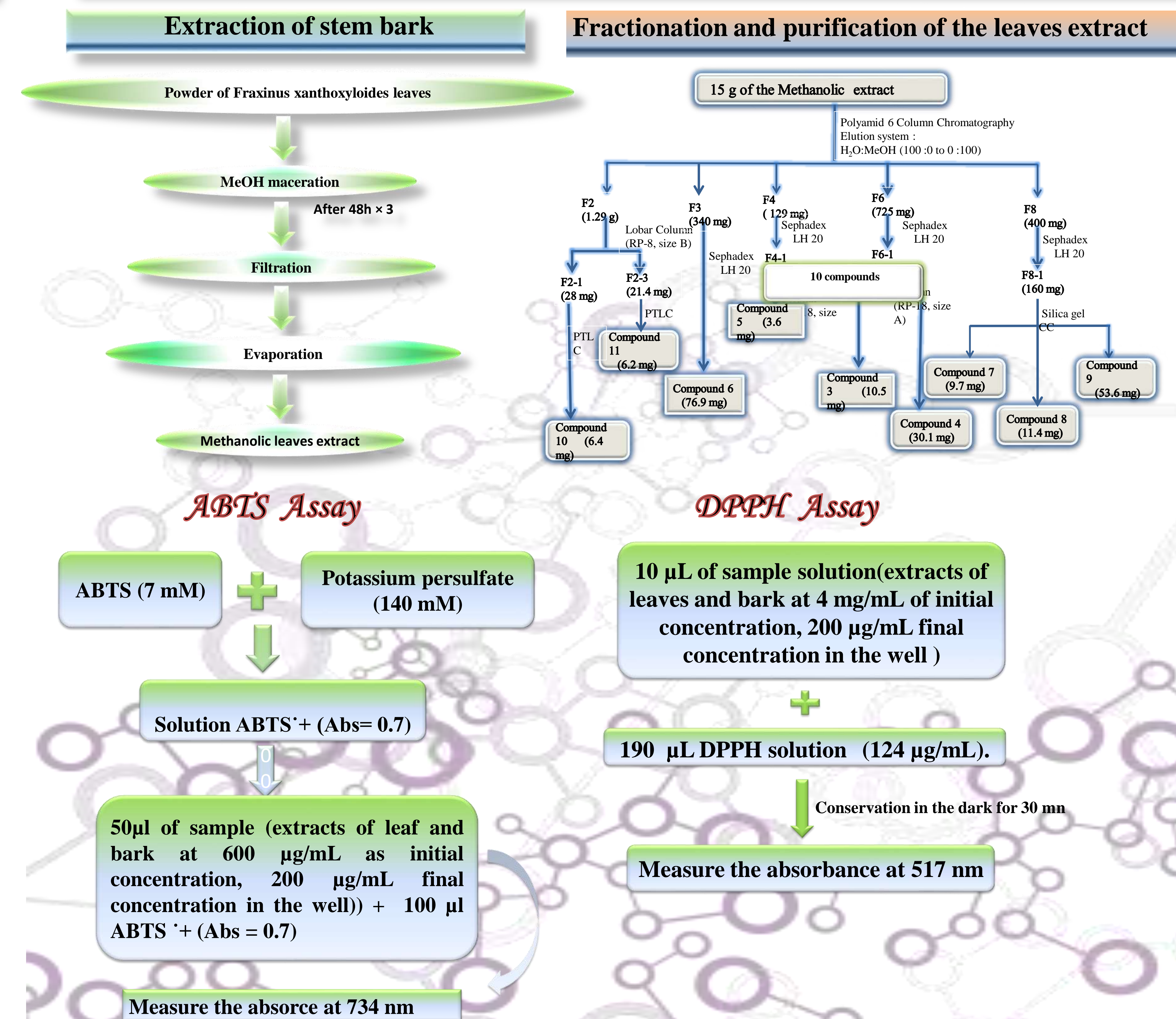
- Treatment of malaria and pneumonia
- Reduce pain during labor and expulsion of premature infant after death



Leaves of the Algerian species

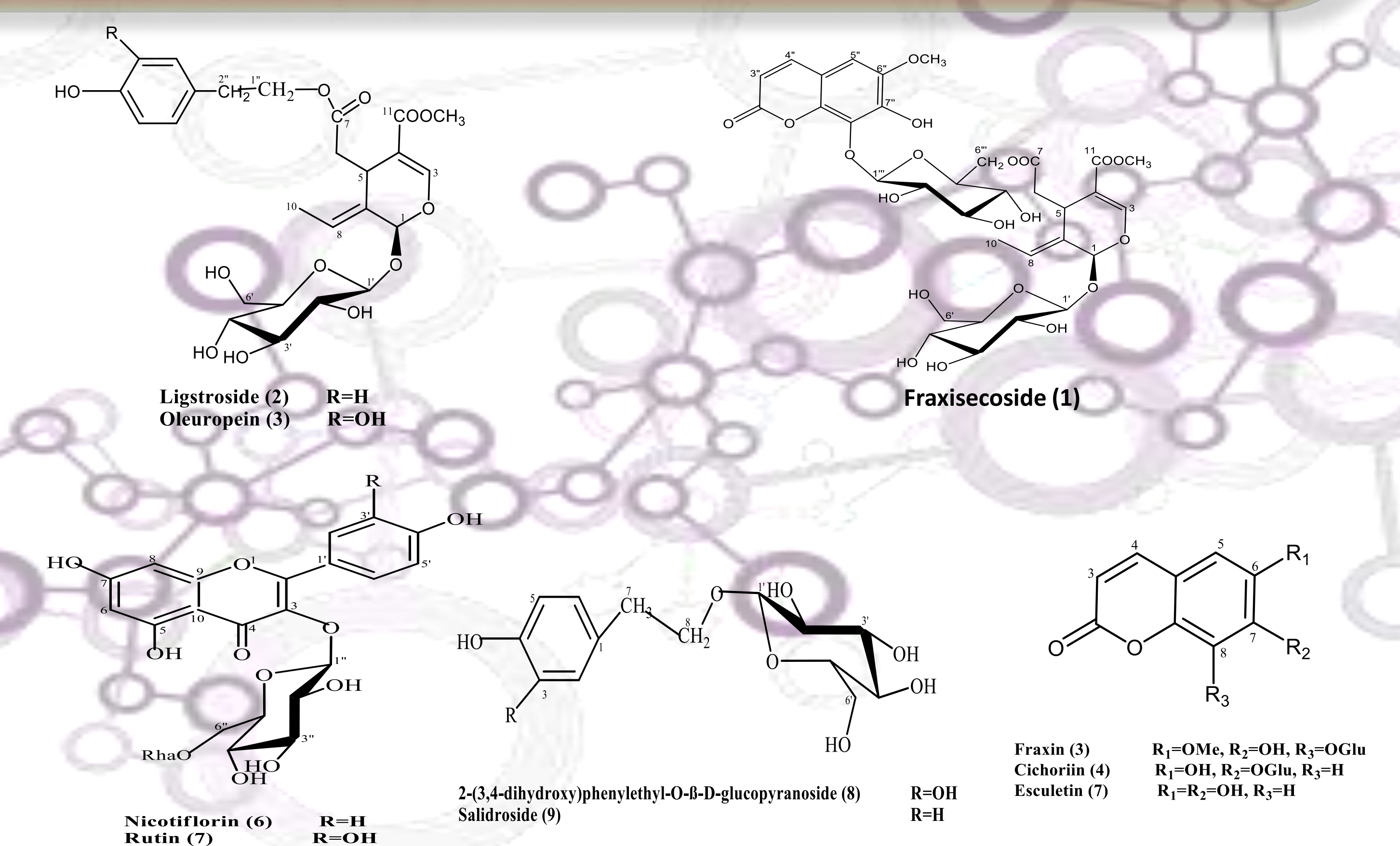
Fraxinus xanthoxyloides.

MATERIALS AND METHODS



RESULTS

Ten known secondary metabolites 1–10 were isolated from the methanol extract including three secoiridoids, three coumarins, two flavonoid diglucosides, two phenylethanoid which are fraxisecoside (1),^[1] ligstroside (2),^[2] oleuropein (3),^[3] fraxin (4),^[4] cichoriin (5),^[5] esculetin (6),^[6] nicotiflorin (7),^[7] rutin (8),^[8] 2-(3, 4-dihydroxy)phenylethyl-O-β-D-glucopyranoside (9)^[9] and salidroside (10).^[10]



RESULTS

1. Total Phenolic and Flavonoid Contents

Table 1. Bioactive compounds quantified in the extracts prepared from the Algerian species *F. xanthoxyloides* (leaves and bark).

| | TPC | TFE |
|-----|------------|------------|
| FDB | 22,1 ± 0,8 | 2,4 ± 2,7 |
| FDL | 20,6 ± 1,6 | 22,2 ± 2,1 |

Total Phenolics, flavonoids are expressed as mg of gallic acid equivalent/g of extract (mg GAE/g of extract), and mg of quercetin equivalent/g of extract (mg QE/g of extract). Experiments were carried out in triplicates, and data are mean ±SD values.

2. Antioxidant Activity

Table 2. Antioxidant activity of the extracts of the Algerian species *F. xanthoxyloides* leaves and bark at 200 µg/mL.

| | DPPH | ABTS |
|-----------------------|------------|------------|
| FDB | 74,3 ± 2,2 | 42,8 ± 1,6 |
| FDL | 51,0 ± 1,1 | 28,6 ± 0,7 |
| Gallic acid (5 µg/ml) | 50 | |
| Trolox (8 µg/ml) | | 50 |

The bark and the leaves contained comparable amounts of total phenols (22.1±0.8 mg GAE/g of extract and 20.6±1.6 mg GAE/g of extract, respectively). The bark extract showed a minimum amounts of flavonoids (2.4±2.7 mg QE/g of extract), whereas, the leaves extract contains 22.2±2.1 mg QE/g of extract.

Two different tests were used in vitro: DPPH free radicals scavenging and ABTS radical cation decolorization assay.

•The methanol bark extract (FDB) exhibited a higher antioxidative activity than that of methanol leaves extract (FDL). The bark extract inhibited DPPH free radicals scavenging with 74.3 ±2.2 %, whereas, leaves extract showed inhibition slightly above 50% (51 %). In the case of ABTS assay, inhibition was lower than 50 % for the two extracts.

•Compared to gallic acid which strongly inhibited the DPPH with 50 % at a concentration of 5 µg/ml, the methanol extracts used in this study showed a weak activity.

CONCLUSION

This study constitutes a preliminary work to evaluate the content in polyphenols and the antioxidant activity of the extract *F. xanthoxyloides* leaves. These promising results pave the way for further detailed studies of their chemical composition and finding of the active components.

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