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**Phytochemical and Biological Study of Essential Oil Extracted from Algerian *Ruta montana L.***

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One of the major concerns in food technology is lipid oxidation, due to the formation of oxidation products such as fatty acid hydroperoxides and secondary degradation products (alkanes, aldehydes, alkenes). Oxidation processes are also deleterious in human health, since they induce tissue damage responsible of several pathologies. The utilization of synthetic antioxidants such as BHT, BHA or TBHQ can prevent food oxidation or cell damage; however such substances present some toxicity.

In this paper, we will demonstrate the capacity of essential oil extracted from aromatic plant belonging to the *Rutaceae* family, to act as antioxidants. The essential oil from aerial part of *Ruta montana L.* at full flowering stage grown in Algeria was obtained by hydrodistillation using the traditional heating. The yield of extracted essential oil was 0.49%.

The analysis of essential oil by CG, CG/MS and <sup>13</sup>C-NMR revealed 40 components constituting 94.7% of the total oil, substantially higher amounts of ketons (65%) and lower amounts of monoterpene hydrocarbons (0.5%) illustrated in this essential oil, and the major components were found to be 2-undecanone (33.4%), 2-nonanone (27.5%) and 2-nonanol acetate (14.8%).

The evaluation of the antioxidant activity was carried out by *In Vitro* methods (DPPH test), which demonstrated that essential oil exhibited strong antioxidant capacity compared to that of BHA and BHT, the high percentage of ketons compounds in these plants essential oils would be at the origin of their significant reducing capacity. These studies confirm the use of *Ruta montana* as medicinal plant and can be used in pharmaceuticals and natural therapies of infectious diseases for humans.

**Keywords**

*Ruta montana L.*, essential oil, ketons, hydrodistillation, antioxydant, <sup>13</sup>C-NMR.