The Effect of extracts of Oaks bark Quercus aegilop and seeds of Nigella sativa on the Activity of Leishmania donovani and Leishmania tropica

A thesis

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Summary

Leishmaniasis is endemic and wide spread in Iraq so five species of plants were selected to test their effect on Leishmania parasite, these plants include Quercus aegilpos, Nigella sativa, Eugenia caryphllus, Melia azedarch and Jugalns regia. The present study was conducted on the aqueous and alcoholic extracts of Q. aegilpos and N. sativa while the extract of E. caryphllus, M. azedarch and J. regia was excluded due to low of its effects against the promastigotes of Leishmania donovani and Leishmania tropica.

The results of the present study showed that the extracts water, ethanol, hexane, and ethyl acetate of Q. aegilpos and N. sativa have effectiveness on visceral and cutaneous Leishmaniasis in vitro. The best concentration of the extracts was (5 and 10) mg/ml.

Secondary products compounds (Phenols and alkaloids) of Q. aegilpos and trepens of N. sativa was extracted and their effects on parasites were examined in vitro.

The statistical analysis of these three secondary products show there is little differences among them and the alkaloids of Q. aegilpos has highest effects.

The total means of (phenols 29.25, Alkaloids 36.81 and terpens 30.81) on visceral Leishmaniasis and (phenols 36.94, Alkaloids 36.81 and terpens 37.06) on cutaneous Leishmaniasis.

Phenols and alkaloids of Q. aegilpos and terpens of Nigella sativa were identified with the use of high performance Liquid chromatography (HPLC) technique .

Six saturated and five unsaturated fatty acids were identified from hexane extract of N. sativa while five saturated and six unsaturated fatty acids were identified from chloroformed extract of N. sativa.

Nine phenols compounds and more than eight alkaloids compounds were identified from Q. aegilpos extract. There is enough time to separate all of these compounds , two alkaloids

compounds isoquinoline (50 µg/ml) and β-carboline (34.7 µg/ml) were separated. The effects of these two compounds has been tested on the visceral and cutaneous Leishmaniasis in vitro and in vivo. Isoquinoline was more effective on the parasite than the β-carboline alkaloid. The active groups of the two Alkaloids compounds were identified using the Infra Red (IR) and Ultra Violate (UV) spectra .

The effectiveness of the above two alkaloids (isoquinoline and β-carboline) were tested against the visceral and cutaneous Leishmaniasis in vivo either by injection in peritoneal membrane or given orally to the laboratory mice using different concentration.

The total length of the spleen was in healthy and infected mice were measured and after treated of infected mice with o.2 ml of both alkaloids compounds for two weeks .The length of the spleen of mice treated with these two compounds became close to the length of the spleen of healthy mice. The isoquinoline was the most effect than β-carboline on the infected spleen. The Glutamic

Oxaloacetic Transaminase (GOT) and Glutamic Pyruvic Transaminase (GPT) enzymes were assessed on infected and uninfected mice.

The study show the effect of the infection with Leishmaniasis on mice (W.B.C.). The number of lymphocyte was decreased in number while the number of eosinophil was increased.

Histopathological changes of spleen and liver of mice infected with Leishmania were investigated. Numerous of Kupffer cells together with infiltration and aggregation of immune cells near by the blood vessel of the liver tissue were noticed. The lysis of lymphocytes in red palp of spleen tissue was quite clear. Treated of infected mice with isoquinoline and β-carboline (o.4 ml/ two weeks) show highly infiltration of lymphocytes near by the blood vessels with increasing of hepatocytes pigments and numerous of kupffer cells.There is lysis of lymphocytes together with increased in number of immune cells in red palp of spleen.