

STUDY ON ANTIOXIDANT AND HYPOLIPIDEMIC EFFECTS OF POLYPHENOL-RICH EXTRACTS FROM *THYMUS VULGARIS* AND *LAVANDULA MULTIFIDA*

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Abstract

In the present study, the polyphenol-rich extracts of two medicinal plants widely used in Errachidia country (south east of Morocco) (*Thymus vulgaris* and *Lavandula multifida*) were assessed for their antioxidant, hypocholesterolaemic and hypotriglyceridaemic activities. The antioxidant activity of polyphenol-rich extracts was assessed by using the FRAP assay (Ferric Reducing Antioxidant Power), the RSA method (Radical Scavenging Activity) and the inhibition of the AAPH (2, 2'-azobis (2-amidinopropane) hydrochloride)-induced oxidative erythrocyte hemolysis. Hyperlipidemia was induced in rats by intraperitoneal injection of Triton WR-1339 at a dose of 200 mg/kg body weight. The animals were divided into normolipidemic control group (NCG), hyperlipidaemic control group (HCG) and hyperlipidaemic plus herb extracts (0.2 g/100 g body weight). However, 24 h after treatment by polyphenol-rich extract of *Thymus vulgaris* and *Lavandula multifida* we not detect any significant effect on both plasma total cholesterol and triglycerides profiles. Our results indicate that, the aqueous extract from *Lavandula multifida* and *Thymus vulgaris*, present a higher antioxidant activities. Indeed, *Lavandula multifida* presents an anti-hemolysis activity equivalent to that exhibited by *Thymus vulgaris*. The addition of AAPH decrease the half time of hemolysis by 45%. The polyphenol- rich extracts from *Thymus vulgaris* and *Lavandula multifida* varieties increase the half time hemolysis by 533% and 479%, respectively. Although, these two varieties of thyme and lavender did cause any hypolipidemic activity. The results found are encouraging for further assessment to elucidate the mechanism of action and to identify the bioactive compounds implicated in the antioxidant effect and the membrane stability.

Keywords: Antioxidant effect; Hypolipidemia; Polyphenol; Erythrocyte hemolysis; *Thymus vulgaris*; *Lavandula multifida*.

Table 1: Polyphenol content and antioxidant activity of *Thymus vulgaris* and *Lavandula multifida* polyphenol-rich extract.

	<i>Thymus vulgaris</i>	<i>Lavandula multifida</i>
Yield dry extract (%)	14,8	6,4
FRAP (mmol trolox/g PRE)	48,03±0,66	12,76±0,48
RSA (IC50 / mg/ml PRE)	0,7±0,02	2,6±0,01
Polyphenols (mg eq ac caféique/ g PRE)	356±9,79	199,16±11,20
Flavonoids (mg eq de rutin/g PRE)	186,93±25,19	142,55±1,66

Table 2: Antihemolytic activity of aqueous thyme and lavender extracts.

	Haemolysis half-time (min)	% diviation
Control	073,33 ± 2.88	
AAPH sample	040,00 ± 0.01*	- 45 %
AAPH + <i>Thymus vulgaris</i>	253,33 ± 5.77*	+ 533 %
AAPH + <i>Lavandula multifida</i>	231,66 ± 2.88*	+ 479 %

*P<0.001 (AAPH versus control ; *Thymus vulgaris* and *Lavandula multifida* versus AAPH)