INTRODUCTION

Rosemaries (Rosmarinus, Lamiaceae) are indigenous to European and North African countries surrounding the Mediterranean basin (1). Rosmarinus officinalis is the most widespread species with a circum-Mediterranean distribution (2). It is a long-lived shrub which varies in stem and leaf forms from long-short to wide-narrow and flower colors from white to violet.

Rosemary is a medicinal and aromatic plant which is used widely in foods, perfumes, cosmetics and medicinal preparations. It is well known that the activity of rosemary extracts in food industry and medicine due to the presence of some important antioxidant oil and phenolic components (3,4), to prevent oxidative degradation of oil and lipid containing foods and cosmetics (3,5,6). It represents a good source of natural antioxidants used commercially instead of synthetic antioxidants in the food industry (7). The compound mainly responsible for the antioxidant properties of rosemary has been found to be carnosic acid (8,9,10,11).

Rosemary (Rosmarinus officinalis L.) has a large population which covers about 8850 hectares in Eastern Mediterranean Region of Turkey (12). It has several varieties which vary in their leaf yields, essential oil contents and phenolic compounds.

The aim of this study was to select more productive Rosmarinus officinalis varieties with commercial importance and to present improved saplings to farmers.

MATERIAL AND METHODS

The trials were established in 3 areas with 50 different provenances from Eastern Mediterranean Region of Turkey in November 2005. The saplings were grown with cutting in spring months of 2005 and planted with 0.70 x 0.70 (cm) intervals in each parcel at trial areas. Trials were established at three different altitudes according to randomized complete block design with 3 replications. In each replication, provenances were presented with 25 saplings. It was evaluated interior 9 saplings in each parcel because of border effect of different varieties. Karabucak trial area was irrigated three times throughout summer months but Eshab+t Kehf and Mersin trial areas were not irrigated. Trial areas were observed throughout 3 years and harvested in October and November months of each year.

The analysis samples were shadowed for 10 day and dried by a climate control device at a temperature of 37 Celsius for 12 hour. Dry leaf yield/fresh biomass yield (%), dry leaf yield/dry biomass yield (%), dry biomass yield/fresh biomass yield (%), fresh biomass yield (kg/da), dry biomass yield (kg/da), dry leaf yield (kg/da) and essential oil content (% of the provenances) were investigated for each trial area and combined areas. In addition to this, carnosic acid proportions of the provenances which have the highest essential oil contents by mean values of the trial areas were analyzed by HPLC (High-Performance Liquid Chromatography). Essential oil contents were analyzed by hydro-distillation for 3 hours using a Clevenger-type apparatus. However relative humidity contents were analyzed by xylene-distillation using a volumetric analysis apparatus. Thus essential oil contents were determined by dry base.

RESULTS

In the end of this study, it was determined rosemary varieties which have high dry leaf, essential oil and also carnosic acid yields with commercial importance making individual selection from the trial areas. Thus clonal saplings have been produced and presented to the farmers who want to raise rosemary.

In terms of varieties’ dry leaf yields and essential oil yields, it has been determined the highest dry leaf yield with 449,11 kg/da and the highest essential oil content with %4.4 at Karabucak trial area. In terms of varieties’ carnosic acid contents, it has been determined the highest proportion with %5.31.