

Effect of Microwave Pre-treatment of Oilseeds on Oil Quality

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In our previous study we have shown the influence of microwave pretreatment on the quality and quantity of oil from soybean and on the activity of urease and trypsin inhibitors.

In this work we are investigating the effect of microwave heating on quality of oil from different oilseeds.

We have used microwave heating as pretreatment of crushed seeds before oil extracting. Crushed seeds were moistened prior heating, duration of pretreatment was from 5 to 10 min. Oil was extracted from seeds with the screw press or by hexane.

As it was measured the temperature of seeds during treatment depended from heating capacity and moisture of seeds. The rate of seed drying under microwave heating was by order of magnitude greater comparatively with conventional heating.

Our results have demonstrated also increasing of pressing oil input almost by 40 % in case of microwave pretreatment and we have observed the similar effect of microwave pretreatment on quantity of oil extracted by hexane. The quantity of extracted oil was almost 50 % higher comparatively with conventional pretreatment.

We have shown that oil obtained after microwave pretreatment of seeds was differing from control oil (after conventional heating). The both sample had almost the same acidity but oil after microwave pretreatment had lower peroxide value (1.2 and 1.7 mMol $\frac{1}{2}$ O/kg respectively).

We were studying the effect of microwave pretreatment on tocopherols content in oil. Our results have demonstrated its increasing in press oil from seed after microwave pretreatment.

We have determined the amount of soluble protein in pressing cake. The degree of protein denaturation in pressing cake after microwave pretreatment of seeds was about 13 % and 36 % — in control.

We are concluding that microwave pretreatment of oil seeds is a gentle treatment that results in increasing of quantity of obtained oil and improves the products quality.