soaking treatments, e.g. unknown, 7 (R.RT.T. 0.86) and Δ-7-stigmasterol (R.R.T. 1.25) were detected only when rapeseed was soaked in hot water at 70°C for 24 hours. Also, cholesterol compound was identified in very minute quantities only after different soaking treatments. Moustafa et al. (1986) stated that different soaking treatments of soybeans had induced a remarkable changes in both hydrocarbon and sterol contents.

III.4.4. Chemical composition of rapeseeds meal :

The changes occurred in chemical composition of rapeseed meal as a result of soaking seeds in tap water, hot water (70°C) and 2% alkaline soln. are represented in Table (16). These results indicated that, all soaking treatments caused a slight change in moisture content of rapeseed meal. It is clear that soaking of rapeseed in either tap water or hot water (70°C) caused a noticeable decrease in its ash content. Ash content was decreased from 7.04% in the control to 5.89, 5.25 and 5.39% in hot water (70°C) for 6, 12 and 24 hrs., respectively. These decreases in ash contents might be attributed to the less induce in some elements of rapeseed meal in soaking water. On the other hand, ash content was increased after soaking seeds in alkaline soln. as it was increased from 7.04% in un-soaked seeds to 8.35, 8.35 and 8.48% in residual meal of soaked seed in alkaline

Table (16): Effect of various soaking treatments on chemical composition of rapeseeds meal.

Contents	Control	Tap water			Hot water (70°C)			2% NaOH sol		
		12 hrs.	24 hrs.	36 hrs.	6 hrs.	12 hrs.	24 hrs.	12 hrs.	24 hrs.	36 hrs.
Moisture (%)	٩.28	9.20	8.92	8.96	9.10	9.18	9.05	9.13	8.89	8.97
Ash (%)	7.04	6.73	6.79	6.90	5.89	5.25	5.39	8.35	8.35	8.48
Crude fibre (%)	8.46	7.49	7.62	7.01	7.47	6.59	6.51	7.68	7.69	7.65
Protein (%)	34.63	34.41	34.18	34.29	33.55	33.03	33.56	33.38	33.16	33.12
Reducing and non-reducing (%)	4.60	4.32	3.21	3.05	1.41	0.96	C.96	3.68	1.25	0.93
Minerals (%)										
Na	0.022	0.021	0.020	0.020	0.020	0.020	0.019	0.041	0.056	0.094
K	0.440	0.440	0.430	0.410	0.420	0.415	0.410	0.435	0.430	0.430
Zn	0.160	0.158	0.157	0.152	0.156	0.155	0.153	0.159	0.159	0.156
Cu	0.037	0.036	0.034	0.034	0.035	0.033	0.031	0.035	0.035	0.036
Mn	0.080	0.078	0.077	0.075	0.077	0.076	0.073	0.080	0.078	0.078

soln. for 5, 10 and 20 min., respectively. This increase in ash content might attributed to the increase in sodium content of rapeseed as a result of soaking seed in 2% NaOH soln. Table (16).

All elements content except sodium showed a minor changes upon exposed the seeds to all soaking treatments under investigation. Soaking rapeseed in 2% sNaOH soln. caused a marked increase in its sodium content, as it was increased from 0.022% in control to 0.041, 0.056 and 0.094% after soaking in alkaline soln. 2% for 12, 24 and 36 hrs., respectively. Total crude fibre was gradually decreased with increasing soaking time either in tap water or in hot water and this decrease was higher in the latter treatment than the former one Table (16). It decreased from 8.46% in control sample to 7.49, 7.62 and 7.01% in meal of seeds soaked in tap water for 12, 24 and 36 hrs., respectively.

Crude fibre content after soaking of rapeseed in alkaline soln. was also decreased from 8.46% in the control sample to 7.68, 7.69 and 7.65 in the resulted meal for 12, 24 and 36 hrs., respectively. Some partial hydrolysis of crude fibre content might took place during soaking treatments.

All soaking treatments had induced a gradual decrease in reducing and non-reducing sugar with increasing the

period of soaking treatments, Table (16). The reduction percentage in these sugars contents were much higher in samples soaked in hot water, followed by alkaline and tap water, respectively. This means that they decrease in reducing and non-reducing sugars might be attributed to the partial dissolving of these sugar in soaking media.

III.4.5. Total glucosinolate compounds and myrosinase enzyme activity :

Soaking treatment in tap water had induced a gradually decrease in myrosinase enzyme activity with increasing soaking periods since it decreased from 1.76 g/100 g in the control sample to 1.64, 1.52 and 1.40 g /100 g for 12, 24 and 36 hrs., respectively. The same results was also achieved with total glucosinolate compounds since it was decreased from 1.88 g / 100 g in the control sample to 1.76, 1.70 and 1.68 g /100 g in meal of seeds soaked in the forementioned treatments, respectively. Also, some decrease was noticed in myrosinase enzyme activity and total glucosinolate compounds during soaking treatments in hhot water(70°C) as shown in Table(17).

On the other hand, soaking in 2% NaOH soln., occurred also gradual decrease in myrosinase enzyme activity and total glucosinolate compounds with increasing the time of soaking and the rate of decrease was higher than soaking in both tap water and hot water (70°C). Such results are similar to those obtained by Moustafa et al. (1986) during their study the effect of various soaking treatments on the tripsin enzyme of soybean seeds.