press cake obtained from sieve no. 0.315 (315 μ) were completed in 76-159 min. Oil (20, 43%) based on dry material has been obtained on average from this material in Soxhlet analysis. Average moisture of the material was 9.26%, and average ash was 1.10%. Average oil yield of the first press cake obtained from sieve no. 0.315 (315 μ) was 100.18% compared to Soxhlet.

The ratio of the solvent to the material was higher in the experiment made on corn germ press cake compared to the ones made on corn germ. It was 1.594 kg/1 kg on average. These results were due to the fact that while the corn germ press cake was being pressed, its particles were subject to high pressure and were squeezed together. In order to have a satisfactory extraction, it was necessary to use more hexane compared to the amount used for the corn germ.

The results we obtained in the physical and chemical experiments made on the raw and unrefined oils were found to be within the range of the characteristics of the refined corn oil given in the literature (4). The results of these experiments are shown in Table II.

A Gulbaran Extractor & Diffuser of the pilot plant type has been designed and constructed. Experiments made with this extractor in both batch and continuous systems have given excellent results technologically. These studies were done on various materials, such as flaxseed, rapeseed, moonflower seed and soybean, will soon be published with the methods of applying them to technology.

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The Occurrence of Dihydromalvalic Acid in Some Seed Oils

Sir:

Bohannon and Kleiman (1) found small amounts of dihydromalvalic acid, 9-10 methylenehexadecanoic acid (DHM), in eight of 19 seed oils containing cyclopropene fatty acids (CPFA).

In a study of the occurrence of CPFA in 40 seed oils (Vickery [2]), the gas liquid chromatographic techniques used were unable to separate very small amounts of DHM from oleic esters, but they detected 4.0-4.9% of DHM in *Litchi chinensis* seed oil.

In our studies, 39 seed oils were reanalyzed and two additional oils were assayed to detect the presence of DHM, using a 40-m glass capillary column coated with All-Tech CS-10 (Alltech Associates, Sydney), a cyano-silicone similar to Silar 10C, in a Packard chromatograph with an oven temperature of 175 C. All other experimental methods were similar to those outlined in the previous paper (2).

DHM was prepared by hydrogenating methyl malvalate dissolved in dry methanol using the catalyst Pd on activated carbon (Fluka A.G.). A mixture containing 8% 16:0, 32% 18:0, 22% DHM and 38% 18:1 was used for reference. The

TABLE I

Concentrations of Dihydromalvalic Acid (DHM) in Halphen-Positive and Halphen-Negative Oils

Halphen-positive			Halphen-negative		
Family	Species	Mass %	Family	Species	Mass %
Thymelaeaceae	*Pimelea decora*	Tr[a]	*Anacardiaceae*	*Harpephyllum caffrum*	0.1
	P. linifolia	0.2		*Mangifera indica*	0.2
Eleaocarpaceae	*Elaeocarpus reticulatus*	0.5		*Melanorrhoea pubescens*	0
Malvaceae	*Abutilon auritum*	0.2		*Pistacia chinensis*	0.2
	Gossypium sturtianum	0.4		*Schinus molle*	0.1
	Hibiscus diversifolius	0.1	*Celastraceae*	*Elaeodendron melanocarpum*	0.3
	H. trionum	0.2	*Ebenaceae*	*Diospyros australis*	0
	Lagunaria patersonia	tr	*Elaeocarpaceae*	*Elaeocarpus alaternoides*	0.3
	Lavatera plebeia	1.0		*E. persicifolius*	0.2
	Pavonia hastata	0		*E. rotundifolius*	0.1
	Radyera farragei	tr	*Rhamnaceae*	*Emmenosperma pancheranum*	0
Sterculiaceae	*Brachychiton gregorii*	1.2	*Sapindaceae*	*Dodonaea boroniifolia*	0.6
	Heritiera actinophylla	0.3		*D. petiolaris*	0
	Lasiopetalum macrophyllum	0		*D. triangularis*	0
	Rulingia corylifolia	0.8		*D. truncatiales*	0
Sapotaceae	*Pouteria wakere*	0.1		*D. viscosa*	0
Celastraceae	*Elaeodendron australe*	0		*Jagera pseudorbus*	0.2
Sapindaceae	*Dodonaea triquetra*	0.1	*Sapotaceae*	*Mimusops commersonii*	0.4
	Koelreuteria elegans	0.2		*Planchonella australis*	0.1
Gnetaceae	*Gnetum gnemon*	0.5		*P. myrsinoides*	0.4
				Pyriluma sphaerocarpum	0

[a]Tr = trace (<0.1%).

chromatograph clearly separated DHM (ECL 18.4) and 18:1 (ECL 18.7).

Results of the analyses for DHM in 20 oils containing CPFA (positive Halphen color test) and in 21 oils giving a negative Halphen test are given in Table I.

Small amounts of DHM (0.1% or greater) were detected in 14 Halphen-positive (mean 0.29%) and 13 Halphen-negative oils (mean 0.15%). Comparing these results with those obtained for dihydrosterculic acid (DHS) (2), both DHS and DHM occurred in five species of the Halphen-positive oils and both were absent in three. In the Halphen-negative oils, both acids occurred in eight species and both were absent in four. The results agree with those of Bohannon and Kleiman (1) in that the amounts of DHM are generally much lower than those of DHS.

DHM occurs in only four of eight species of the Sapindaceae family. If the results from families represented by only one or two species are omitted, DHM occurs more frequently in oils from the Anacardiaceae, Elaocarpaceae, Malvaceae, Sapotaceae and Sterculiaceae families. An appreciable amount of DHM occurs in *Gnetum gnemon* seed oil which Berry (3) has recently found to contain as much as 39% malvalic acid.

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